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ABSTRACT

This annual serial issue of the Maryland Association for Higher Education (MAHE) contains seven papers on developmental education programs and other academic support services at postsecondary institutions in Maryland. The papers are: (1) "Report of the Remedial Education Subcommittee, Maryland Partnership for Teaching and Learning, K-16 Work Group" (Charlene R. Nunley), which presents 18 recommendations including replacement of the term "remedial" with "developmental"; (2) "The Maryland Community College Skills Assessment Project" (Sandra W. Tomlinson), which reports on efforts to reform and standardize assessment efforts; (3) "Innovation and Achievement in Educational Development at Prince George's Community College" (David P. James, Craig A. Clagett, Margaret A. Taibi), which describes implementation of enhancements to that institution's developmental education program during 1996-98; (4) "Improving Minority Student Success: Crossing Boundaries and Making Connections Between Theory, Research, and Academic Planning" (Morris Keaton, Craig A. Clagett, Isa N. Engleberg), which describes efforts to study and improve the academic success of minority students; (5) "The Changing Picture of the Legality of Affirmative Action Programs in Student Admissions and Financial Aid" (Shin Lin), which summarizes the legal status of affirmative action in student admissions; (6) "Two Weeks vs. Two Years of Developmental Mathematics" (Roxann King), which describes brief review courses students take just prior to taking college mathematics courses; and (7) "Study Skills Make a Difference in Developmental Mathematics" (Yvonne Seon and Roxann King), which describes a series of workshops at Prince George's County Community College for at-risk developmental mathematics students. (Individual papers contain references.) (DB)

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The MAHE Journal

Volume 21 ♦ October 1998

Maryland Association for Higher Education

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Craig A. Clagett

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The MAHE Journal

Volume 21 ◊ October 1998

Maryland Association for Higher Education

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The MAHE Journal is published annually by the Maryland Association for Higher Education (MAHE). MAHE comprises individuals and institutions committed to the advancement of higher and adult education in Maryland. MAHE, through its conferences and publications, promotes communication among all sectors of higher education in Maryland.

Contributions to **The MAHE Journal** are welcomed. Manuscripts should be double-spaced and should include the name, title, institutional affiliation, telephone number, and e-mail address of the author. Upon acceptance of the manuscript, the author will be asked to submit the manuscript on diskette. Mail all editorial correspondence to Craig A. Clagett, Office of Institutional Research and Analysis, Prince George's Community College, 301 Largo Road K-231, Largo, MD 20774. Electronic communication should be sent to cc5@pgstumail.pg.cc.md.us.

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Foreword

Over half of Maryland's college students attend open-admissions institutions, with significant proportions requiring developmental education. Maryland's future economic health and social well-being will be influenced by the success of today's "at-risk" students. While the need for academic support services and comprehensive developmental education programs is great, there are those in government and the popular media who decry public expenditures for such purposes.

This volume of **The MAHE Journal** contains several articles related to developmental education in Maryland. The volume begins with a report from a subcommittee of the Maryland Partnership for Teaching and Learning K-16 Work Group. The Remedial Education Subcommittee, comprised of 29 representatives of Maryland public schools, community colleges, universities, and state education agencies, reviewed research on remedial education, conducted focus groups, and issued 18 recommendations. Chief among them was the suggestion that the term "remedial" not be used, given the variety of circumstances that lead students to need pre-collegiate education. The more encompassing term "developmental" was preferred, to capture the array of services needed to prepare students for college study.

Closely associated with developmental education are the assessment methods used to determine who should be placed in pre-collegiate courses. Sandra Tomlinson provides a history of the Maryland Community College Skills Assessment Project. Instructional deans from the community colleges, partially responding to concerns prompted by release of the Maryland Higher Education Commission's Student Outcomes Assessment Report (SOAR)—which identified the extent of remediation needed by recent high school graduates–launched the skills assessment reform effort. Community college faculty in reading, writing, and mathematics have worked to reduce the number of assessment instruments used in the state from 14 to three, select preliminary cut-off scores, and design a field test.

In the next article, David James, Craig Clagett, and Margaret Taibi describe the developmental education program at Prince George's Community College. Extensive program enhancements were implemented during 1996-98. While it would be premature to reach a summary judgment, the early evidence suggests that the program is promoting achievement among the college's underprepared entrants. The following article describes efforts to study and improve the academic success of minority students. Coordinated by the Institute for Research on Adults in Higher Education (IRAHE) located at the University of Maryland University College, these initiatives link educational theory, institutional research, and campus program planning to promote retention and achievement of at-risk minority students.

Shin Lin summarizes the legal status of affirmative action programs in student admissions and financial aid, based on presentations made at a spring 1996 symposium sponsored by the Maryland Association for Higher Education.

The volume closes with two articles describing successful programs to enhance student progress and success in developmental mathematics.

Craig Clagett
Editor

Report of the Remedial Education Subcommittee, Maryland Partnership for Teaching and Learning K-16 Work Group

Charlene R. Nunley

The Remedial Education Subcommittee of the Maryland Partnership for Teaching and Learning K-16 Work Group convened on May 19, 1997. The Subcommittee includes representatives from school systems, two-year and four-year colleges and universities, the Maryland Association of Community Colleges, and the Maryland Higher Education Commission. In our representation we attempted to include schools and colleges of different sizes distributed across the state. Most importantly, however, we sought people who wanted to be involved in dialogue and debate on remedial education and who were willing to devote substantial time to consideration of this topic.

Based on its charge from the K-16 Work Group, the subcommittee established the following objectives for itself:

- Compile research that has been done in Maryland and nationally on remediation. Summarize data on rates of remediation, types of testing used to determine college readiness, characteristics of programs that are most effective in addressing skill deficits, and data on effectiveness of remediation for students with entering skill deficits.
- Create a definition of remediation that is clear enough to assure consistency in reporting of remediation among colleges throughout Maryland.
- Identify the underlying factors that contribute to the number of students who are not ready for collegiate level classes in certain disciplines at the time of high school graduation.
- Identify best practices examples of school systems and colleges that are having success in reducing the need for remedial education.

- Brainstorm new approaches that may be effective in producing increased levels of college readiness and develop a set of recommendations for review by the K-16 Council.
- Attempt to clarify the role that various types of colleges and universities should play in addressing the need for remediation.

It is important to note that the Remedial Education Subcommittee has not addressed issues pertaining to English for Speakers of Other Languages (ESOL) or learning disabled students in our deliberations. These are important student groups and their needs have some relationship to the needs of remedial students but are distinctly different. The state may wish to convene a separate group to determine how K-16 initiatives foster achievement of ESOL and learning disabled students.

Also, we have focused most of our attention on high school-college connections and many of our recommendations are concentrated in this area. We recognize, however, that many other significant national and state groups are focusing on issues of early childhood development, reading skill development in elementary schools, Head Start, and other programs geared toward younger children. We believe that these initiatives are essential to improving educational preparation and success of students and to the reduction of need for remedial education at the collegiate level.

The communication across high schools, two-year and four-year colleges, and state officials that is occurring from the K-16 initiative is one of its most valuable results. Certainly the members of our subcommittee have grown in respect of each other's issues and problems as a result of our work during the past year.

In finalizing our report, we have shared it with a variety of groups across the state to obtain their perceptions of our recommendations. Some of these groups include statewide school superintendents and principals, the Developmental Education Association of Maryland (DEAM), the Maryland Association of Community Colleges, the Intersegmental Chief Academic Officers Task Force, community college instruction and student services deans, business leaders, and elected officials. (The groups that reviewed the report are listed in the appendix.) We have made several modifications to this report based on their input.

The Remedial Education Subcommittee believes that the issues of remediation are much more complex, and the reasons students require remediation are more varied, than those which the general public seems to understand. We hope to contribute to the furthering of understanding through this report. Also, we believe the term remediation is a misnomer, often misapplied, and that we might be better off if its use were abandoned or narrowly applied to those cases where its use is most appropriate. At the end of this report we offer a variety of recommendations that will foster understanding, clarify definitions, and perhaps reduce the need for remediation among recent high school graduates.

A Summary of Research on Remedial/Developmental Education

The subject of developmental education has been a growing area of interest, nationally and in Maryland, as evidenced by a growing number of reports, studies, and increasing cov-

erage by the media of this topic. For example, in October 1996, the National Center for Education Statistics published *Remedial Education in Higher Education Institutions in Fall 1995*. Their survey findings included the following:

- About three-quarters of higher education institutions that enrolled freshmen offered at least one remedial course in fall 1995.
- Twenty-nine percent of first-time freshmen enrolled in at least one remedial reading, writing, or mathematics course in fall of 1995.
- About half of the institutions offering remedial courses indicated that the number of students enrolled in remedial courses at their institution had stayed about the same in the last 5 years, 39 percent said enrollments had increased and 14 percent said they had decreased. A greater percentage of public two-year than of other types of institutions indicated that remedial enrollments had increased.
- Institutional credit (e.g., credit that counts toward financial aid, campus housing, or full-time student status, but does not count toward degree completion) was the most frequent type of credit given for remedial reading, writing, or mathematics courses, with about 70 percent of institutions giving this type of credit in each subject area.
- The most frequently used approach for selecting students who need remedial coursework was to give all entering students placement tests to determine the need for remedial coursework.
- About a quarter of institutions reported that there was a limit on the length of time a student may take remedial courses at their institution. Time limits on remediation were set by institutional policy at 75 percent of the institutions with time limits, and by state policy or law at 21 percent of the institutions.

The Maryland State Department of Education and Maryland Higher Education Commission have also undertaken a number of studies of remedial education including the annual Student Outcomes and Assessment Reports (SOAR) and *A Study of Remedial Education at Maryland Public Campuses* (1996).

Throughout the state many local press articles have been written on the performance of public school graduates on collegiate placement tests along with editorials criticizing the school systems as a result of this performance.

Some findings that appear common across local, state, and national research on remediation include the following:

- Highest rates of remediation are for mathematics, followed by English and reading; for example, among 1994 high school graduates in Maryland, 37 percent needed math remediation, one-quarter needed English remediation and one-fifth needed remedial reading.
- Much remediation is done in two-year colleges with 100% of public two-year colleges offering developmental courses and 60 percent of Maryland's community college students needing developmental courses; many four-year colleges also offer remediation, particularly in mathematics.

- Those who complete developmental courses do well in their collegiate courses; however developmental course completion rates are relatively low. This suggests that every effort needs to be made to help students avoid the need for developmental education if we wish to maximize their successful performance in college; it may also imply that some students may benefit from counseling to select other career preparation options that do not require the traditional collegiate experience.
- The more underprepared the student is at the time of college entrance, the less likely the student is to complete developmental courses; for example, a Maryland study found that students who needed remedial help in two or more subjects achieved lower GPA's than those who didn't need remedial classes.
- Course-taking patterns in high school are predictive of whether students will need developmental education in college; while high school counselors cannot compel students to take college preparatory courses, they can use information available from research to advise students and their parents of those courses that lead to college readiness.
- The courses required for the high school diploma are not necessarily the courses required for college entrance.
- Many of the students enrolled in developmental courses are adults and for them developmental courses may involve skill refreshing more than it reflects inadequacies in prior educational preparation.
- Students in developmental courses often bring an array of serious challenges in addition to poor academic preparation. These include poverty, less than adequate home environments, family responsibilities, emotional problems, poor study skills, and learning disabilities. Thus effective developmental programs usually include more than just academic skill preparation to assist students with various other support needs.

A Context for Understanding "Remediation"

Broadening of access to higher education has been a significant objective of our country. Once the province of the few, higher education is now available to the many. The community colleges were founded on the foundation principle of broadening access to college. They provide open, non-selective admissions to high school graduates and to any adult who can show ability to benefit. The Partnership for Family Involvement in Education (1996) points out, "Education beyond high school is...becoming more of a necessity to make a living and ensure our well-being in a highly technological society. Workers with bachelor's degrees earn, on average, almost $15,000 more a year than workers with high school diplomas. Graduates of community colleges with a two-year associate degree earn almost $12,000 more per year than high school graduates." Also, young people are aspiring to college in larger and larger numbers. "Today, almost 70 percent of all young people want to get a bachelor's degree or higher. This is a huge jump from 1982 when only 39 percent of young people had similar aspirations." (Partnership for Family Involvement in Education, 1996). These facts, among others, mean that for the great majority of today's high school students their high school di-

ploma may not be their final educational credential. Kindergarten through college has become the typical educational aspiration. This broadened access not only benefits the student but is also essential to the economic well being of our nation.

However, the need to serve at the collegiate level students with much wider varieties of educational preparation and ability has consequences to the educational programs of both school systems and colleges and universities. Students entering colleges and universities today may not have exited high school from any program that approximated a "college prep" track. There was not a presumption to this point (and perhaps it will never be a reasonable presumption to make) that *every* high school graduate should be college ready. Yet, in the eyes of many, the fact that students need developmental education is perceived to be a failure of the public schools. Reference some recent headlines: "Local Graduates Fail to SOAR", "Study Finds County Grads Struggle at MC", "School Officials Worry About Study on College Readiness." Thus even though there does not appear to be any written standard that implies that high school graduation and college readiness are one and the same thing, some in the public clearly believe that this should be the case.

Even the new core learning goals that have recently been adopted by the Maryland State Department of Education do not assure that high school graduates will be ready for the first collegiate course in a particular discipline upon high school graduation. A good example is from the field of mathematics where a group of college and school educators and Department of Education officials have been working to create a series of "bridge" goals that bridge the differences between the content in mathematics required for high school graduation and the content foundation required for collegiate general education mathematics courses. Certainly students who have taken advanced and honors mathematics in high school are likely to be prepared for the collegiate courses upon high school graduation. However, those who merely meet the core learning goals are unlikely to be ready for that first collegiate mathematics course. Therefore, when some students are found not ready for collegiate mathematics courses, it reflects failure of neither the school system nor the student. Both have accomplished what was expected of them.

Also, in considering the topic of remediation, it is important to reflect on the fact that students develop intellectually and emotionally at different rates and are not necessarily ready to focus on particular learning concepts all at the same age. Community college educators can cite thousands of cases of students who began college at 18, performed miserably, came back when in their 20s or 30s, took remedial courses, achieved honor roll status, and graduated. The achievements of these students are tremendous success stories of the American educational system — successes that may be negated if we perceive remedial education as something that reflects failure of our educational system, and then go forward to develop very rigid policies about availability and access to it.

Another factor often forgotten when reviewing research on remediation is the fact that students of widely varying ages and times between formal high school preparation and college entrance take the collegiate placement exams. A recent study of the Maryland Higher Education Commission (1996) found that three-fourths of the people whose scores place them in remedial courses are age 20 or over. These adults may have relatively long gaps between their high school mathematics preparation, for example, and their testing on collegiate place-

ment instruments. For them, remediation in many cases is a process of refreshing forgotten information rather than a reflection of inadequacy in their previous educational preparation.

Finally, some of the students who test into remedial courses are students who, for whatever reason, did not learn what was taught them in high school courses. For them, remediation may reflect a failure of motivation in the high school years, inadequacies in our educational system, lack of developmental readiness or some other factors. The magnitude of skill limitations in some cases is startling, with sizable numbers of students not having mastery of basic mathematics skills or not reading at the ninth grade level. A separate area of inquiry might address the standards for promotion from grade to grade beginning in the primary grades. It is not the intention of the Remedial Education Subcommittee to suggest the educational system bears no responsibility and should not be held accountable for performance levels of students who receive high school graduation credentials. We believe, however, that the accountability measures should be fair and should reflect the complex factors that result in people needing remedial course work.

Results of Developmental Education Student Focus Groups and Surveys

To contribute further understanding of factors that lead recent high school graduates to need remediation, the Remedial Education Subcommittee convened several focus groups and also surveyed some students who were enrolled in developmental classes. We were most interested in what the recent high school graduates told us about their experiences in developmental education since their experience relates most directly to the K-16 initiative. We did, however, have a few adult participants, and their perspectives are included in the summary that follows. Focus groups were conducted at Carroll and Montgomery Colleges. Bowie State University and Frederick Community College undertook surveys of some students in remedial classes. While we can't claim the findings of these research efforts to be thoroughly representative, we believe that they do add insight.

In the focus group at Montgomery College, 16 students participated, 11 of whom were Montgomery County Public Schools graduates. Summary findings follow:

Student-Related Factors, Montgomery College Focus Group

- Every student (100%) indicated that they did not take high school seriously.
- Twelve students indicated that their major reason for going to high school was to socialize.
- Eleven students indicated that they really had no plan for what they wanted to do beyond high school.
- Thirteen students cited the sophomore year as the year when they took on the "I don't care" attitude.
- Every student (100%) mentioned that they purposely did not take challenging courses in high school.

- About half of the students mentioned that they were not motivated in high school.
- Half of the students indicated that they did not think that they would go to college.
- Every student clearly understood why they were enrolled in remedial work at the college.

School-Related Factors, Montgomery College Focus Group

- A majority of the students indicated that high school teachers spend too much time on discipline (i.e. take off your hat, your shorts are too short, throw away your gum, sit down, be quiet, etc.)
- About half of the students wished they had a course on vocabulary in high school.
- About one-third of the students indicated that they were never told what they needed in order to go to college.
- About half of the students mentioned that they did not write one paper during their final two years of high school.
- Many students mentioned that teachers had low expectations of them.
- One student mentioned that she was so involved in sports and club activities that she would often miss class (excused absences). She felt that she would often use this reason if she did not feel like going to class.

At Carroll Community College, 14 students participated in the focus group. Twelve of these were enrolled in developmental courses because it was required and two chose to enroll in these courses on their own. About half felt the material in these courses was basically the same as material that was covered in high school. However, large differences in content of math courses was noted. Two-thirds indicated that they had planned to go to college after high school; the others had not. A large majority believed that the remedial coursework had been helpful to them.

Some other things they told us about factors that led them to need developmental education:

Student-Related Factors, Carroll Community College Focus Group

- Participants spoke to their own low level of motivation to learn in high school and the many factors influencing their lack of academic motivation.
- Students in high school reported being oriented toward the present, with little appreciation for the impact of present actions on future possibilities.
- It was suggested that "developmental readiness," on the part of students, was a factor in learning math in high school.

School-Related Factors, Carroll Community College Focus Group

- Students' perceptions were that they were not adequately prepared for college math while in high school; some recalled of being "pushed" through their courses.
- Of the 8 students for whom high school transcripts were on file, 6 had taken Algebra 1 in the 10th grade; one took Algebra 1 in the 11th grade, and one took Algebra 1 in the 12th grade. None of the students had taken any math past Algebra I. Thus, the "forgetting factor" may have played a role in explaining why students placed in remedial math.
- Students stated that it was important that they perceive an expectation of success on the part of the instructors.
- Not enough tutoring time was made available to students; some students stated that additional tutoring time would have enhanced their ability to succeed.

Frederick Community College undertook a survey of students in a developmental intermediate algebra course. They asked the students for factors they would change in their personal approaches to high school math and factors that they believe their schools should change. Some of the students' suggestions follow:

Student-Related Factors, Frederick Community College survey

Changes the students would make are:

- Study more
- Go through math slowly and take time to figure out a way to ask questions
- Take math courses each semester to ensure that knowledge learned is not forgotten
- Do more homework
- Take more class notes
- Find a better way to study
- Take higher level math courses, and do more work in them
- Do the classwork
- Take math more seriously
- Review before a test
- Memorize formulas and recognize how to solve problems
- Make sure not to miss a class

School-Related Factors, Frederick Community College survey

Changes the schools might make included:

- More review for college placement testing
- Smaller math classes, more individual attention, and regularly scheduled tutoring sessions
- Be sure to push the student; make math challenging
- More algebraic requirements
- Show what will happen in college, if math is not taken seriously
- More explanations of certain problems and significant review sessions for students
- Require work to be shown on all tests
- More math homework
- Instruct math in a fun way, not just throwing dry information at the students
- Make algebra mandatory
- Give more big math tests
- Have a math lab
- More use of graphing calculators
- Pay closer attention to individual student needs
- Include some of the questions and review for the placement exam
- Make sure the whole class keeps up with the "over-achievers"

Bowie State used a survey approach with their students. A total of 32 students participated. Most participants in the survey were relatively recent high school graduates. The great majority enrolled in developmental courses because they were required of them. The majority indicated that material covered in their developmental courses was not the same as that covered in high school. Nearly all of them had planned to go to college while in high school. About two-thirds indicated that based on what they know now, they would have taken different courses in high school. All but one believed that their developmental coursework was valuable to their success in college classes. The Bowie survey did not elicit comments for verbatim transcription.

While the size of our focus groups and survey samples was small, we believe the consistency in what the students told us makes this exploratory research a useful contribution to our understanding of factors that lead students to need developmental education. The Remedial Education Subcommittee was impressed by the candor of the students and by their willingness to accept personal responsibility for their placement in developmental courses. We believe it is important that overwhelming majorities believed that they had been appro-

priately placed. Their comments pertaining to how the educational system could serve them better merit further attention and additional, statistically more definitive research. Some of their comments helped shape the recommendations that follow.

Recommendations

Based on our review of the research, our focus groups, our knowledge of developmental education, and our collective discussions and debates, the Remedial Education Subcommittee offers the following comments and recommendations for consideration by the State of Maryland:

- The Random House dictionary defines remedial as "designed to correct one's skill in a specified field." Remedial reading in the same publication is defined as "instruction in reading aimed at increasing speed and comprehension by correcting poor reading habits." From our description of the variety of factors that lead students to need remediation, we do not conclude that they have all done something "incorrect" or that their habits in a particular field of study are poor. Therefore, **we recommend that the term remedial not be applied to the type of education described in this report.** We believe that the variety of circumstances that lead students to need this kind of pre-collegiate education do not fit well the definition of remedial and the negative connotation it conveys. If the term is to be used, we believe it should be used in the narrow connotation to which it fits. It is our strong conviction that remedial education, if the term must be used, must be differentiated from developmental education. Whereas developmental education seems to fit the context of first time exposure and sometimes "refresher" exposure to the basic skills necessary for a successful collegiate academic experience, remedial education fits best those situations that review material previously and recently presented to the student. Attempting to make this distinction among students on the part of colleges that undertake assessment testing could prove difficult; therefore, we prefer the broader and less negative characterization of this education as developmental.
- **Developmental is a more encompassing term that better reflects the array of people who need pre-collegiate courses at the collegiate level.**
- **We recommend integrated, comprehensive developmental programs designed to move students into collegiate level courses as soon as possible.** The Developmental Education Association of Maryland (DEAM) notes that the most successful developmental programs offer all students a wide range of opportunities and services which are closely interwoven with the credit offerings of the college. "Delivered by faculty and staff who bring an understanding of intellectual development, of appropriate pedagogy, and of reasonable expectations of higher education, these programs seek to integrate rather than isolate the developmental student." Quality developmental programs recognize that success in college entails a personal adjustment that is not only academic, but also social and psychological.

- **In those cases where high school exit requirements do not correlate directly to readiness for the first collegiate course, data on remedial rates should not be reported in a manner that creates an impression that the schools have not adequately performed their jobs.** Both the schools and the students have met state standards; and in this case, the students find themselves needing courses that bridge the gaps between high school graduation and college requirements.
- **Our focus groups suggest that many students are not taking their high school preparation seriously enough. The Subcommittee supports intervention programs in high school beginning in tenth grade. These programs should be designed to give students a sense of their standing with regard to college readiness and to encourage them to think carefully about future college choices.**
- **Our focus groups and other national research also reinforce the need for higher expectations for students and for extensive counseling and advising of students with regard to college entrance requirements. College/public school partnerships should be created to address this issue.**
- **We recommend that college students such as those who participated in our focus groups become part of a program whereby they would visit local school systems and discuss their collegiate experience**. Sharing some of the factors that resulted in their needing developmental education might result in other students considering their high school preparation more seriously.
- **We recommend that more formal mentoring programs between high school students and college students be considered particularly for those high school students that public school officials believe are not performing at their potential in tenth and eleventh grades.**
- **We recommend that the role of reading in high school curricula be carefully explored and strengthened and that necessary funding be provided to assure reading instruction at the high school level.**
- **We recommend a strong focus on study skills in high school programs and in developmental courses and programs in colleges and universities.**
- **We recommend the creation of more partnerships to focus on curricula and course content of high schools and colleges**. These efforts should carefully review curricula to assure that collegiate and high school courses are as well sequenced as possible to maximize student success in both systems. This is particularly essential as more and more students need collegiate preparation for access to jobs.
- **We recommend that colleges and school systems partner to create parental education programs.** These programs should be designed to assure that parents understand in detail the requirements and expectations of both career or baccalaureate programs at the collegiate level as well as the consequences for students who come to college underprepared.

- **More significant partnerships should be created between two-year and four-year colleges to assure that collegiate curricula are as sequenced as possible to foster student success.**
- **The community colleges should work on a campaign to help students understand that open access does not mean open standards.** The committee fully supports the open access mission of community colleges. Certainly students can attend community colleges if their skill levels are not at the collegiate level; however, students need to understand that they will face the consequence of spending time and resources on developmental courses and lengthen the time to completion of their degree if their skills are not at the level needed for college success.
- **As high school assessments are developed, we recommend that performance outcomes in each individual academic area and perhaps workforce areas be defined at two levels: 1) the level that certifies meeting high school graduation requirements and 2) the level that certifies college readiness, particularly in mathematics and English.** The state should consider setting goals that increase the percentages of students meeting the college readiness requirement each year.
- **Business should be involved in mentoring high school students to aspire for excellence by paying attention to grades and school attendance of high school students who work in their companies and by requiring high school transcripts as part of their hiring efforts**. We recommend this attentiveness not so much as an employment decision tool but instead as a way for businesses to reinforce for students the fact that their academic preparation will affect their long-term ability to be successful in the employment world.
- **We recommend continuing research, including additional focus groups and surveys, to collect data to improve developmental programs.** Research should assess the impact of the state's core learning goals and high school assessment on the number of students who need developmental education. This research should be broadly shared among institutions, educational sectors, and policy making bodies.
- **We recommend periodic statewide meetings of school systems and colleges to focusing on exemplary practices in developmental education, particularly those that involve school/college partnerships.**

As part of the charge of the committee we carefully reviewed the recommendations on remediation of the Maryland Higher Education Commission (MHEC) in their 1996 report on remediation. Our thoughts and reactions to these recommendations follow each one.

MHEC Recommendation: To consider whether it is appropriate for public four-year institutions to offer remedial education in any form.

We believe that most developmental education should be undertaken in two-year colleges; however, given the wide variety of circumstances that result in students needing developmental education, we believe that four-year colleges will continue to play a role as well. This is true particularly in

mathematics where high school graduation and college entry requirement are not one and the same.

MHEC Recommendation: To research the effectiveness of "privatizing" remedial services through contracts with tutoring companies.

Community colleges have extensive experience in providing developmental education. At least one experiment in Maryland (Howard Community College) suggests that cost effectiveness of privatization is in question. We fear that privatization may have a negative impact on high school-college collaboration and K-16 efforts. Research shows that affiliation is a key element in retaining students in college. Affiliation is encouraged when developmental programs are carefully tied to credit programs. For all of these reasons, we believe that contracting out of developmental education should be considered only in those cases where this method can be demonstrated to be clearly superior to developmental education provided by the colleges.

MHEC Recommendation: To explore greater use by public institutions of special student fees to cover at least part of the cost of the remedial services.

The Remedial Education Subcommittee opposes this recommendation. As the previous paragraphs have pointed out, students need developmental education for widely varying reasons, many of which have no blame attached to them. Also, these students often come from financially disadvantaged family circumstances and their access to higher education would be substantially impacted by a special fee. We do, however, support limiting the number of times students may repeat developmental courses without demonstrating substantial progress toward college readiness. We believe that at least two repeats should be permitted, but beyond that, institutions should have the right to charge a higher fee or restrict further access to the courses.

MHEC Recommendation: To take steps to develop mechanisms to collect accurate, consistent and complete data about the funding of remedial courses and other remedial activities across public institutions.

The Subcommittee supports the need for such data and for its careful consideration by policy makers in the state.

MHEC Recommendation: To seek consistent standards and practices for remediation among public campuses, particularly those with similar missions. This would include the tests that are used to identify and place students, the determination of cut-off scores, the groups of students who are assessed, and the criteria used to determine when students can exit remedial courses and the limits on the number of times remedial classes or examinations can be taken.

Efforts to standardize tests and cut-off scores to determine entrance into college-level courses are underway by community colleges now, with expectations of standardization in the next two years. The issue of standardizing exit skill levels has not been addressed. For now, we believe we

should focus our efforts on entry cut-off scores and consider the issue of exit skills at a later date. We support reasonable limitations on the number of times remedial classes can be taken.

MHEC Recommendation: To investigate the extent to which campuses are offering degree credit for remedial courses in violation of Commission policies.

To our knowledge colleges are not offering degree credit for remedial courses; however, practices in credit awarding for those courses that bridge the gap between high school graduation requirements and college general education requirements vary among institutions. We would support an effort to standardize these practices as well as to standardize which courses are classified as remedial through the state's SOAR system.

MHEC Recommendation: To direct the Commission staff to continue to monitor the success rates (retention, graduation and transfer) of students who receive remedial assistance and submit reports on this topic to the Commission.

We support this continuing research with the strong recommendation that the distinction between remedial and developmental studies be noted or that the term remedial be discontinued and developmental be the term used in researching these types of student success rates.

MHEC Recommendation: Request the Commission staff to begin discussions with the public institutions through the Finance and Academic Advisory Councils about other policy relevant issues emerging from the study of remedial education.

We support this recommendation.

MHEC Recommendation: Request the Secretary to ask the Maryland Partnership for Teaching and Learning K-16 to examine the implications of the remedial education study for the adequacy of high school graduation standards in the state and to investigate whether additional actions are needed to insure that students are prepared for college-level work.

The increasing college going rate of the population makes it essential that high school graduation and college entrance standards be as closely aligned as possible. We are not convinced, however, that they can or should be 100 percent synchronized. There will always be some students who will not go to college, and direct workforce entry in some fields continues as a highly viable alternative. We believe that a debate on alignment of high school and collegiate preparation needs to be continued as the high school assessment program is brought to reality and as the testing associated with it is evaluated to determine whether it reasonably can be used in some college course placement decisions.

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Anne Arundel County Local Labor Market Team

Anne Arundel County Tech/Prep Steering Committee

Board of Education of Washington County

Developmental Education Association of Maryland

Frederick County Public Schools
College Readiness Subcommittee, Writing Subcommittee, Assessment

Greater Hagerstown Education Committee

Local and State Legislators

Maryland Association of Community Colleges

Maryland Association of Secondary School Principals

Maryland Council of Community College Instructional Deans

Maryland Council of Community College Presidents

Maryland K-16 Leadership Council

Maryland K-16 Workgroup

Maryland Local Assistant Superintendents for Instruction

Maryland State Deans of Student Development

Montgomery County Chamber of Commerce

Statewide Math Education Groups

State Department of Education - Guidance Specialists in the Pupil Services Branch

University of Maryland Eastern Shore Faculty, Deans, Vice Presidents and President

The Maryland Community College Skills Assessment Project

Sandra W. Tomlinson

Maryland community colleges are bound by law and by philosophy to accept all high school graduates. To be sure, they welcome the valedictorians, but they also welcome the students who, not having planned to attend college at all, were satisfied to graduate with undistinguished grades. Indeed, they receive students who dropped out of high school and later earned their GED's. And, although recent high school graduates increasingly choose community colleges for their first two years, the average age of a community college student is still in the late twenties. In part because of their non-traditional populations, Maryland community colleges have, since their early history, asked new students to take reading, writing and math assessments to determine their skill levels. Scores on these assessments have served as guides to placing students into appropriate courses. The particular policies and procedures related to assessment and placement, however, have developed institution by institution rather than statewide. Before the Maryland Community College Skills Assessment Project, it was common for individual departments to select and sometimes write their own assessment materials. Even when a popular tool such as Asset was adopted by two or more colleges, the institutions designated different cut-off scores to place students into college-level or developmental courses.

Of course there were always problems. Students complained when they did not agree with the results or did not believe that they should be bound by them. Public school personnel sometimes charged that their graduates were misplaced. To all appearances, however, there was no really widespread dissatisfaction with the status quo until 1993, when the Maryland Higher Education Commission (MHEC) released the first Student Outcomes Assessment Report (SOAR) profiling 1991 high school graduates by county. A portion of the report indicated the numbers and percentages of recent graduates requiring remediation when they entered college. Dismayed by the results, public school officials declared that the data were inaccurate and that the figures were not truly comparable from one county to another. They pointed out that many different instruments were used; many were even locally authored;

and even on the same tests cut-off scores varied from one place to another. Having heard enough of an outcry to believe that an investigation was in order, the Maryland Council of Community College Presidents (MCCCP) charged the Maryland Council of Community College Instructional Deans (MCCCID) with a thorough review of current assessment and placement practices in Maryland community colleges.

In response to this mandate, MCCCID created a Placement Committee. After gathering information from the colleges, the committee concluded that basic skills assessment and placement were occurring across the state, but that there was little consistency. This committee proposed the development of a plan which would lead to the adoption of minimum standards and common instruments in all of Maryland's community colleges. The proposal was widely applauded; the development of the plan was projected to require between $116,000 and $160,000, depending on the option. Ultimately, because of the expense, the proposal died. The issue itself remained very much alive.

The instructional deans liked the idea of a statewide plan. In addition to persuasive data collected by the Placement Committee, new COMAR regulations on general education added to the desirability of consistent standards. Published by MHEC early in 1996, these regulations resulted from extensive negotiation by the Intersegmental Task Force of Chief Academic Officers from both two- and four-year institutions. The new code defined general education, delineated general education categories and requirements, and guaranteed the acceptance of general education courses transferred from any public institution of higher education in Maryland to any other. Automatic transfer represented a tremendous advantage for the students of Maryland, and the community college deans were determined to make the agreement work. They hoped that more uniform standards would strengthen the general education courses by guaranteeing acceptable, entry-level proficiency in reading, writing and math. So, heartened by the cooperation that resulted in the new regulations, sensitive to continued complaints about SOAR data, and persuaded that the recommendations of the Placement Committee were valid, in 1996, MCCCID formed yet another task force to examine the feasibility of uniform assessment and placement standards. This task force became the Maryland Community College Skills Assessment Project Steering Committee.

MCCCID's charge to the new committee was to move Maryland community colleges toward the adoption of a maximum of three standardized assessment instruments, along with common cut-off scores for college-level placement. The multiple purposes of the project were to facilitate student transfer among community colleges, to strengthen the new COMAR regulations, and to establish a database that would make comparative data (such as SOAR) more meaningful.

In late spring of 1996, the Steering Committee submitted a proposal for the first phase of the project. Year one had two goals: (1) identification of the three standardized instruments to be used by all Maryland community colleges; and (2) identification of administrative issues and/or barriers entailed in skills assessment. This proposal was approved by MCCCID and funded for $9,000 by the presidents' group. In order to carry out the first phase of the project, statewide discipline task forces in math, reading and writing met throughout the 1996-97 academic year to review instruments and to examine pertinent administrative concerns. When the project began, Maryland community colleges were using fourteen different

assessment instruments to place students into college-level courses. By the end of the 1996-97 academic year, the math, reading and writing groups had recommended the adoption of three: Accuplacer (College Board/ETS); Compass (ACT); and the Descriptive Test of Language/Math Skills—DTLS/DTMS (ETS). Accuplacer and Compass are computer-adaptive tests which offer alternate pencil/paper options (called Companion and Asset respectively). DTLS and DTMS are pencil/paper only. Additionally, in keeping with proposal guidelines, the writing task force recommended that a writing sample be used, either alone, in combination with one of the standardized tests, or as a diagnostic tool to follow placement. Once the recommendations were approved by both the deans and the presidents, colleges were asked to purchase and install the new instruments so that they could be used in advising and registering students for fall 1998 classes.

In May of 1997, the three faculty discipline task forces issued end-of-year reports to the Steering Committee. In these reports, the faculty proposed a three-year implementation time frame, during which the colleges would purchase and install the new instruments, select preliminary cut-off scores, participate in field testing and refine the original cut-offs. The timeline allowed for further deliberation and eventual resolution of the administrative issues that had been raised. In addition, all three reports included a philosophy statement comprised of the following points:

1. assessment represents a snapshot of a student's work at a particular time and place;
2. assessment is a general means of determining student readiness that should be followed by more precise diagnostic measures once a student enters a course;
3. assessments should not be used as exit tools;
4. assessments should be used to place students into courses which offer them both sufficient challenge and a reasonable chance for success;
5. faculty with content expertise should have ownership of the process.

The administrative concerns were numerous: How long should the tests be valid? Who should take the assessments and when? Should placement based on the assessments be mandatory? Should retests be allowed? How should students with disabilities be accommodated? Should assessments be required of transfer students and of students with prior degrees? Should students be allowed to use aids, such as calculators and dictionaries? Should exemptions be allowed? Should other tests, such as the SAT, substitute for the chosen instruments? Should high school grades be factored into placement decisions?

Although the number and complexity of the issues seemed daunting, some of them generated very little dissent. The faculty were in agreement that students with disabilities had to be accommodated—but probably needed to be dealt with on a case by case basis with the help of institutional ADA officers. The three discipline groups concurred that skills assessments should be valid for two years and that students should be retested only once after waiting at least 24 hours. A majority—though not all—of the institutions favored the use of aids for students taking the assessments. At least provisionally, the faculty proposed that a

550 SAT score in either language or math could substitute for the related assessment. There was, however, no consensus on exemptions.

The presidents applauded the 1997 report and funded a second year of the project (again for $9,000). The first requirement of the second phase was that Steering Committee engage a coordinator to work with the discipline task forces and the testing companies to determine cut-off scores and develop a plan for field testing. By late fall it was apparent to the Steering Committee that, with the limited time and funds available, they could not find one person to accomplish all of the tasks required of a coordinator, so they selected two faculty members whose assignment was to work together to facilitate the decisionmaking process and inaugurate the field testing.

By March, 1998, the discipline task forces had selected the cut-off scores. Since many of the colleges were already administering Compass and Accuplacer, the faculty set the statewide cut-off scores by averaging the ones currently in use. Although hardly a scientific decision, it was a compromise position that would allow the field testing to begin.

At the end of spring term in 1998, the discipline task forces and the coordinators issued end-of-year reports to the Steering Committee. The coordinators had created a design for the field test, had engaged an academic computing director to write a program to randomize the field test, and had begun to contact people in charge of administering the assessments at the other community colleges to find out which of the institutions would participate in the field testing. The design calls for a comparison of Compass and Accuplacer. Students participating in the field testing are to complete both Accuplacer's and Compass's placement test in one of the three academic areas (math, reading or language). The order in which the assessments will be given will be randomized, as will the skill area chosen for double testing. Students will take all three of the assessments for the instrument adopted by their institution. Cecil Community College, for example, has adopted Compass; consequently, students there will take all three of the Compass assessments and one module of Accuplacer. By the end of the field testing it is hoped that there will be enough data to identify comparable Compass and Accuplacer scores.

Obviously other field testing issues remain: how to determine the predictive value of the preliminary cut-off scores, that is, how to track students in order to validate the scores. Initially there was discussion about gathering data on student success in the first related college-level course to check the accuracy of the placements. Thinking about the complex factors that influence student performance, however, educators knew that success or failure would reveal only part of the story. The assessments are designed to determine readiness for college-level courses, not to predict success. Students may fail for many reasons; a lack of prior knowledge is only one of them. Thus it may be necessary to investigate student performance early in the term following the assessment. Interviewing or surveying students and instructors about students readiness in the first few weeks of a class may yield more usable information than tracking final success or failure in a course.

Again the issues are not simple. Tracking performance in the first college-level math course will help verify the accuracy of the math placements. Writing instructors can check the precision of the language cut-off scores by tracking students in the first college-level

composition course. However, the reading task force still grapples with the decision of which course to use to verify the appropriateness of the reading cut-off scores: English? History? Any general education course? To complicate matters further, investigating student performance in college-level courses does not answer questions about students who are placed or misplaced into developmental offerings.

In the 1998 end-of-year reports, the discipline groups again submitted recommendations about administrative practices. The faculty task forces remained in accord on certain issues such as the length of time the scores should be valid. However, the questions that had not been resolved the first year were not resolved the second. Recommendations regarding exemptions were multiple and varied (fourteen appeared in one of the reports). Although writing, reading and math faculty all advocated a score of 550 or above on SAT exams as a qualification for exemption, the reading task force proposed that the state should track students to determine that 550 on the SAT is actually equivalent to college-level placement on Compass or Accuplacer. The use of aids, such as calculators and dictionaries, remain a point of contention. The writing task force ultimately recommended that the decision be left up to the individual institutions.

The original proposal for the Maryland Community College Skills Assessment Project stipulated that writing samples for which standardized grading procedures are used would be acceptable. In early discussions, the writing faculty fostered the idea that composition teachers across the state should be trained in holistic grading. In May, 1998, a consultant met with the writing task force. His presentation persuaded the faculty that holistic grading was too cumbersome and expensive a process to implement easily and that most places were returning to the use of the "expert grader" or writing faculty member to score writing assessments. The writing task force has recommended the adoption of the expert grader model, but has continued to urge that faculty be trained in the use of uniform standards to assess student writing.

Throughout the state, as the skills assessment project has continued, a number of serious questions have arisen. Of overarching concern is the challenge of striking a balance between uniform statewide standards and individual institutional autonomy. The original charge to the Steering Committee specified the goal of adopting standardized instruments and cut-off scores. Other issues, however, arose in the earliest task force meetings. Perfect comparability in the data would demand that consistent policies and procedures be adopted throughout the state. Individual colleges may not, however, be willing to surrender the independence inherent in creating their own criteria.

When the second end-of-year report was presented to the community college deans in June of 1998, it became apparent that the question of balance would not be easily resolved. The deans were divided among those who wanted uniform policies and procedures, those who wanted only uniform instruments and cut-off scores, and those who were willing to yield on some issues and not others. The report has now been disseminated to the instructional deans for their study and for their discussion with appropriate people on their on campuses. The debate within MCCCID will continue in fall, 1998.

Meanwhile the field testing is behind schedule, in part because many of the colleges were unable to install the new assessments before the end of the spring semester, and in part because the coordinators were not hired until late in the fall of 1997. Decisions have not been made regarding tracking of students to validate cut-off scores. DTLS/DTMS and Accuplacer cut-off scores do not coincide with score equivalencies recommended by ETS. The Reading Task Force has not agreed upon a gateway course. And the instructional deans have not agreed upon the ultimate balance to strike between uniformity and autonomy.

There have been, however, some remarkable achievements. Community college discipline faculty across the state have met, have debated, have come to consensus. More importantly, they have been willing to surrender much of the departmental autonomy that has traditionally been strong throughout academe. The state has moved from fourteen different assessment instruments to three. The level of cooperation and teamwork seems higher than ever before. Resolution of the remaining issues may take time, but there is plenty of room for optimism.

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Innovation and Achievement in Educational Development at Prince George's Community College

David P. James, Craig A. Clagett, and Margaret A. Taibi

Description of the College

Prince George's Community College (PGCC) is a comprehensive college offering certificate and Associate degree programs, courses to complete the first two years of the baccalaureate degree, and continuing education courses for professional certification, career entry, job upgrading, and personal enrichment. The college receives funding support from the state of Maryland and from Prince George's County. Over 90 percent of the students served are residents of the county. The PGCC campus is located in Largo, Maryland, less than five minutes from the Capital Beltway surrounding Washington, D.C. Selected courses are also offered at extension locations, primarily at Andrews Air Force Base and at five county high schools. The college enrolls approximately 12,000 credit students each fall and spring semester. Over 34,000 different individuals enroll in one or more credit or continuing education classes at PGCC annually.

Prince George's County is large and heterogeneous. With a population exceeding 750,000, the county has more residents than several U.S. states. Largely due to extensive migration from the District of Columbia, the county's demography has changed dramatically over the past three decades. Once a predominantly white, rural jurisdiction, the county is now majority African-American and suburban. With America's largest African-American middle class residency, the county ranks high nationally in income and educational levels. But amid this suburban prosperity, the county also has neighborhoods characterized by urban poverty.

Prince George's Community College is committed to providing effective college-level instruction to all students as well as appropriate counseling support and remediation services to enhance opportunities for student success. To ensure a foundation for college-level instruction, students seeking enrollment in credit courses for the first time are required to demonstrate, either through placement testing or through completion of developmental

coursework, basic academic skill proficiencies in reading, written expression, and mathematics. In cases where a student's basic academic skills as measured by placement testing do not meet the minimum standards established by the instructional departments, successful completion of required developmental courses is mandatory before enrollment in most credit courses. The basic skills tests that students are required to take are the Descriptive Test of Language Skills (DTLS) and the Descriptive Test of Math Skills (DTMS). These untimed tests are administered by the college's Testing Center.

Basic Skills Deficiencies among Entering Students

Two-thirds of the students entering Prince George's Community College in fall 1997 and completing placement testing in all three basic skills needed remediation in at least one area. One-fifth needed developmental coursework in all three areas (see Table 1). The proportion of students needing remediation in at least one basic skill was one percentage point higher than in 1996, ending a downward trend from the high point of 72 percent recorded by fall 1994 entrants to the college (see Table 2). Overall, one out of every six fall students at PGCC is typically enrolled in a developmental class.

Table 1. Remedial Needs of Fall 1997 Entrants Tested in All Three Skill Areas

Tested in all three areas	1,455	100%
No remediation needed	460	32%
Remediation needed	**995**	**68%**
In one area	404	28%
In two areas	277	19%
In three areas	314	22%

Table 2. Percent of Entering Students Tested in All Three Skill Areas Needing Remediation in at Leasst One Area

	1993	1994	1995	1996	1997
Percent needing remediation	70%	72%	70%	67%	68%
Number tested	1,913	1,800	1,866	1,596	1,455

Mathematics is the skill area of greatest deficiency among entering students, with a majority needing developmental work. The proportions of entering students needing developmental reading and English have ranged from a third to two-fifths (see Table 3). The pattern of developmental need among recent high school students has been similar to that for all entering students.

Table 3. Percent of Students Tested in Each Skill Area Needing Remediation, Fall 1993-97

	1993	1994	1995	1996	1997
Mathematics	57% (2,090)	65% (1,963)	61% (2,034)	57% (1,758)	57% (1,585)
Reading	34% (2,029)	32% (1,954)	31% (1,988)	30% (1,878)	32% (1,790)
English	33% (2,030)	35% (1,887)	35% (1,937)	36% (1,840)	40% (1,729)

The Educational Development Program

The Educational Development program serves approximately 2,000 students each term and generates the equivalent of 18,000 credit hours annually. The program has 15 full-time faculty, 37 adjunct faculty, and 33 support staff, including learning laboratory program coordinators, computer specialists, and office workers. The program is directed by the dean of Educational Development, who is assisted by a departmental chair and five faculty program coordinators (four in developmental mathematics and one in language arts). The Educational Development dean reports to the vice president for Continuing Education and Evening Programs. The developmental program is separate from credit English and mathematics, which report to the vice president for Instruction. Educational Development faculty are recruited based on their experience in working with underprepared students, their commitment to meeting students at their level of need, and their belief that all students can learn. The divisional philosophy further incorporates a commitment to collaboration with other campus offices to provide social and emotional support in addition to academic assistance to students. The program is designed to be responsive to adults as well as recent high school graduates.

Distinguishing Features

The Educational Development program at PGCC is characterized by the following distinguishing features:

- **Multi-tiered structure**. Six developmental mathematics courses, two developmental reading courses, a fundamental language skills course, a developmental English composition course, and a college level learning skills course are offered.

With the exception of the three-credit college learning skills course, all developmental courses are equivalent to four semester hours for academic load and tuition purposes, provide Continuing Education Units (CEUs) for successful completion, and do not award credit toward certificates or degrees.

- **Integrated, three-pronged program.** The program's approach to student success includes (1) formal classroom instruction, (2) extensive, mandatory laboratory assignments, and (3) strong advising and tutorial services, some delivered in partnership with other offices on campus. The program places great emphasis on faculty-student interaction and on the value of mentoring, counseling, and advising. Technology is used extensively and viewed as a necessary tool to improve the efficiency and effectiveness of face-to-face interaction.

- **Placement test confirmation.** A second skills assessment is administered to ensure that students are placed in appropriate developmental courses. These departmental diagnostic tests are given during the first week of classes. Although they usually confirm the initial placements based on DTLS and DTMS testing, some students are able to advance to higher level developmental courses or introductory credit courses based on this second assessment.

- **Required laboratory work.** Students are required to complete a minimum of 25 hours of laboratory work in each developmental course. This requirement is monitored by faculty and lab coordinators through a computerized tracking system that documents student lab hours and software usage. In fall 1997, students logged nearly 29,000 hours in the learning lab.

- **Pass-fail grading system.** A modified pass-fail grading system with multiple levels of passing is used by faculty to assess student readiness for more advanced coursework. Student mastery of course material as demonstrated by proficiency tests allow quicker movement into higher level developmental and credit classes.

- **Collaboration with credit faculty.** Close collaboration among credit faculty, developmental faculty, and student support services promotes a seamless transition from developmental to credit coursework. The shared commitment of the vice presidents for Instruction, Continuing Education and Evening Programs, and Student Services to this goal ensures coordination across organizational units.

- **Continuous improvement.** A commitment to continuous improvement encourages further innovations to enhance student success. An example is the R^3 Academy, a learning community model discussed later in this article.

Program Enhancements, Fiscal Years 1996-98

As noted earlier, the developmental studies program is a coordinated effort of formal classroom instruction, laboratory work, and advising and tutoring. All three components of the program were enhanced over the past three fiscal years, reflecting strong support from the Board of Trustees and the president who made the program a budget priority.

Formal Instruction. The Educational Development division took the following actions during fiscal years 1996-98 to strengthen the formal instructional component of the program:

1. Improved the full-time to part-time faculty ratio by hiring five new full-time faculty. This reduced the proportion of courses taught by adjunct faculty from 64 percent to 52 percent.

2 Maximized classroom instructional time by moving administration of developmental mathematics exams to the college's Campus Assessment Center outside of scheduled class hours.

3. Appointed four developmental mathematics coordinators from the teaching faculty to oversee developmental mathematics courses to ensure that academic content, test materials, and student proficiencies met divisional standards. Appointed one faculty member to serve a similar role overseeing developmental reading and English courses.

4. Appointed a language arts textbook review committee to ensure that reading and English materials emphasized integration of reading and writing skills, critical thinking, multi-cultural readings, study skills, practice exercises, and computer-based, multi-media support materials.

5. Hired aides to provide assistance in the classroom to students enrolled in the introductory developmental mathematics course and in the self-paced developmental mathematics course.

6. Implemented EDUCO, a computerized mathematics course, as part of the grant-funded Minority Science Achievement Program sponsored by Clark University in Atlanta.

7. Offered upper-level developmental mathematics and reading courses on-line.

8. Implemented, on a pilot basis, the R^3 Academy (Reasoning, Readiness, Real World), a two-semester, fast-track program for students who have tested into intermediate level developmental mathematics and developmental reading or English. The Academy utilizes a learning community approach and coordinated developmental and credit instruction. A team of faculty, counselors, and advisors provide direct instruction, enrichment programs, mentoring, advising, and student advocacy in solving problems. The innovative, integrated-content approach is designed to enhance the thinking skills and academic competencies necessary for success in college. The curriculum is organized around the theme of community, and students are encouraged to see how learning skills and subject matter are interrelated. Academy classes and activities occur from 9 a.m. to 1 p.m., Monday through Friday. Students must register for the entire full-time, cluster-scheduled block of courses, which includes developmental mathematics, college language skills (integrated reading and writing instruction), a college

success/orientation course, and introduction to computer literacy. Students are organized into teams to complete group projects and are required to make presentations to Academy faculty and students.

Learning Laboratory. Actions taken during fiscal years 1996-98 to strengthen the laboratory component of the program included:

1. Fully implemented the PLATO computerized courseware, consisting of hundreds of modules spanning a broad range of subject areas designed to meet the needs of young adult learners. "Fastrack" tests in English, reading, and mathematics place students in appropriate curricula. Each module is at a specific skill level, with tutorials, drills, and mastery tests. Faculty can track student progress through the PLATO management system.
2. Invested over $300,000 in instructional technology to upgrade the 105 computers in the learning laboratory, implement a computerized data management system so faculty and lab technicians can monitor student lab use, provide faculty access to the lab database from their faculty offices, and purchase software such as Skills Bank IV, Merit Word Problems, and other mathematics, English, and reading comprehension programs.
3. Hired two full-time and five part-time instructional program coordinators to provide immediate help to students using tutorial programs in the laboratory.
4. Hired one full-time and one part-time computer specialists for the learning lab.
5. Provided network access to developmental studies software from all campus computer labs.
6. Installed multi-cultural reading software. Following each passage discussing the customs and economics of diverse cultures are questions that emphasize recall and vocabulary.
7. Installed a multi-level, critical thinking skills program. Students must complete each level before advancing to the next. Topics include history, culture, music, science, and famous personalities. Following each passage are tests of vocabulary and reading comprehension.

Advising and Tutoring Services. The following actions were taken to enhance the advising and tutoring component of the Educational Development program:

1. Developed a handbook for all developmental studies students emphasizing study skills, test-taking strategies, and a variety of exercises to increase student success.
2. Instituted mandatory orientation sessions for all students enrolled in developmental mathematics to inform them of divisional and collegewide support services.

3. Paired Student Services counselors and developmental faculty in teams to develop interventions for developmental mathematics students encountering difficulties. The program incorporates workshops and individual counseling in collaboration with classroom activities.

4. Established a tutoring center exclusively for developmental mathematics students. The Developmental Studies Math Tutoring Center provides over 2,000 hours of tutoring each term.

5. Assigned a faculty member full-time to tutor developmental reading and English students.

6. Offered one-hour, developmental mathematics workshops covering time management, note-taking, study skills, calculator use, math comprehension, memory aids, and math anxiety. Students are credited with two hours of lab credit for workshop attendance.

7. Developed an intensive mathematics review course in collaboration with the college's Continuing Education division. Students scheduled to start a developmental math course are given the opportunity to challenge their math placement by taking a re-test during the last session of the review course. Depending on the test result, students may be able to enter developmental mathematics at a higher level or be placed directly into credit mathematics. Of the 113 students participating in fall 1997, 80 took the test upon completion of the review sessions. Twenty-eight students tested out of developmental and were able to enroll in credit mathematics. Twenty-nine were able to enroll in the highest level developmental mathematics class. Thus, as a result of the intensive review option, half of the students were able to advance their studies by testing out of at least one developmental course.

Evaluation Design

To evaluate student academic progress, PGCC's institutional research office developed the following typology of student outcomes based on longitudinal cohort analysis:

1. **Award and transfer.** The percentage of degree-seeking students in an entering cohort who have earned a degree or certificate from the community college and transferred to a four-year college or university within the study period.

2. **Transfer/no award.** The percentage of degree-seeking students transferring to a senior institution without having earned an award from the community college.

3. **Award/no transfer.** The percentage of degree-seeking students earning a degree or certificate from the community college for whom there is no evidence of transfer.

4. **Sophomore status in good standing.** The percentage of degree-seeking students who have not graduated from the community college but who have earned at least 30 credits with a cumulative grade point average of 2.0 or above, and for whom we have no evidence of transfer. Probably included in this category are a number of students who have transferred to independent and out-of-state colleges or universities.

5. **Achievers.** A summary measure of the preceding four categories.

6. **Persisters.** The percentage of degree-seeking students still enrolled at the community college (as of the last term of the study period) who do not fall into any of the above "achiever" categories.

7. **Non-achievers.** The percentage of degree-seeking students exiting the community college without graduating or earning 30 credits in good standing for which we have no evidence of transfer. Included are the true "dropouts" who have not succeeded in reaching their goals within the study period. Some of these students may have transferred before accumulating 30 credits to independent or out-of-state colleges.

Inclusion of sophomore status in good standing along with the more traditional achievement measures of graduation and transfer reflected the judgment that completing the first year of college represents a significant educational achievement for many community college students. An estimated two-fifths of the students entering PGCC each fall are the first in their family to attend college. For them, the transition to college is a social and cultural adjustment as well as an academic transition. Two-thirds of the college's entrants come to PGCC lacking the basic skills of reading, writing, and mathematics necessary for college coursework. These students must complete one or more developmental courses carrying no degree credit before fully pursuing their degree coursework. Half of the college's students are employed full-time and must balance their college studies with the demands of full-time employment. A majority of the college's students are age 25 or older, and may have family responsibilities in addition to job demands. Three-fourths of PGCC's students attend part-time. A third of the college's students elect to "stop out" for one or more semesters, further delaying credit accumulation.

Program Performance

To establish achievement baselines, the research office used the above typology to study the progress of students entering the college in fall 1990. Of the 2,643 first-time entrants, 256 had short-term, non-degree goals and were excluded from analysis. Of the 2,387 degree-seeking students, 665 or 28 percent had graduated, transferred, or attained sophomore status in good standing after four years. This achievement rate varied depending on student basic skill levels at entry to the college. Earlier studies had found that students needing remediation in mathematics and at least one other area—reading or English composition or both—were most "at risk" of not succeeding. The fall 1990 cohort analysis confirmed this finding. Only 11 percent of the students identified as needing developmental courses in mathematics and at least one other area were classified as achievers after four years. In con-

trast, students with no developmental needs achieved at a rate of 45 percent. Adding in persisters, enrolled at PGCC the last term of the study period, found half of the students not needing remediation successful, compared to only 20 percent of the "developmental math plus" group. Among full-time students, 56 percent of the non-developmental group—compared to 17 percent of the developmental math plus group—had graduated, transferred, or attained sophomore status within four years (See Table 4).

Table 4. Student Outcomes After Four Years, by Developmental Need
Outcomes as of the End of Spring 1994 of Students Entering in Fall 1990

Outcome	No Developmental Needed		Developmental Math Plus	
	Total	Full-time	Total	Full-time
Award and transfer	4%	7%	<1%	1%
Transfer, no award	17%	24%	2%	4%
Award, no transfer	5%	6%	1%	2%
Sophomorew/2.0+ GPA	18%	19%	7%	9%
Achievers	45%	56%	11%	17%
Still enrolled	5%	4%	9%	7%
Non-achievers	50%	40%	80%	76%
Total students(100%)	861	536	628	281

Achievement levels varied by the number of skill areas needing remediation. Twenty-eight percent of the students needing remediation in only one basic skill had graduated, transferred, or attained sophomore status in good standing within four years of entry to PGCC. Achievement rates dropped to 17 percent for those needing developmental in two areas, and 11 percent for those needing developmental classes in all three areas of mathematics, reading, and composition (See Table 5). Clearly, the extent of need for developmental education influenced credit accumulation and academic achievement.

Achievement also reflected student progress through recommended developmental courses. A fifth of the students initially identified as needing remediation by testing did not take developmental courses, due to early attrition, avoidance, waivers granted by counselors, or through re-testing. These students attained an achievement rate of 21 percent, compared to 45 percent for students not needing remediation. Students who took developmental courses but failed to pass them had an achievement rate of 4 percent. Students passing at least one developmental course, but not completing required remediation in any skill area, had an achievement rate of 11 percent. Fifteen percent of the students completing remedia-

tion in at least one skill area, but not all skill areas of need, achieved. Most notably, 46 percent of the students needing remediation who completed all developmental work recommended achieved. While only accounting for 16 percent of the students needing remediation, these developmental completers achieved at the same rate as students not needing developmental courses. Thus it appeared that the program worked for those who completed it, but getting more students through the program remained a challenge.

Table 5. Achievement After Four Years and Developmental Status
Percent Graduating, Transferring, or Attaining Sophomore Status
Fall 1990 First-time Student Cohort

	Number of Students	Percent of Cohort	Percent Achievers
Basic Skills Assessment (n=students tested in all 3 areas)			
No developmental courses needed	861	42%	45%
Developmental courses needed	**1,170**	**58%**	**18%**
In one area	390	19%	28%
In two areas	380	19%	17%
In three areas	400	20%	11%
Developmental Progress (n=students identified as needing developmental)			
No developmental courses taken	262	22%	21%
Dev. courses taken/none passed	214	18%	4%
Course(s) passed/no area completed	198	17%	11%
Some, but not all areas completed	315	27%	15%
All developmental work completed	**181**	**16%**	**46%**

Support Programs for Developmental Students

As noted earlier, a key attribute of the college's program is collaboration with support services located across campus. The college has a number of such services, including two that specifically target underprepared students, a minority student retention program and a TRIO-funded Student Support Services program. Institutional research studies have found that participants had higher retention rates and were more likely to graduate or transfer than students not participating in the programs. While methodological limitations prohibit definitive con-

clusions, the studies suggest that student support programs involving sustained personal attention and multiple services can enhance the achievement of developmental students.

Improved African American Student Achievement

While the need for developmental education cuts across all demographic groups at the college, the incidence of need is greatest among the college's African American population. Four out of five African Americans enrolling at PGCC have needed developmental education. Past studies had found the gap between African American and white student achievement wide and growing. To examine more recent trends in student progress, four-year achievement rates were calculated for three first-time cohorts (students entering in fall 1990, 1991, and 1992). The percentage of each cohort graduating, transferring, or reaching sophomore status in good standing hovered around 28 percent. In contrast to this stability in achievement rates of the entire cohorts, when disaggregated by race and sex differences in achievement trends surfaced. The percentages of African American men and women who had graduated, transferred, or attained sophomore status in four years *increased* across the three cohorts. In contrast, the percentages of white men and women classified as achievers decreased (See Table 6).

Table 6. Achievement Rates After Four Years
Percent of Students Graduating, Transferring, or Reaching Sophomore Status in Good Standing

Cohort Subgroup	1990	1991	1992
African American males	13% (N=465)	15% (N=459)	17% (N=526)
African American females	19% (N=720)	22% (N=698)	26% (N=686)
White American males	39% (N=400)	33% (N=302)	34% (N=295)
White American females	42% (N=499)	40% (N=396)	38% (N=388)
Total Cohort	28% (N=2,394)	27% (N=2,154)	29% (N=2,182)

The research office plans to continue its studies of the progress and achievement of developmental students. The cohort analyses will be extended to six years, and additional support services will be evaluated. The R^3 Academy will receive special analysis, as a decision must be made whether to expand what is now a pilot program. Early results were encouraging, with 37 of the 38 participants returning in spring 1998 for a retention rate of 97 percent.

Cost Data

The average cost per FTE student of developmental instruction at PGCC has always been below the collegewide mean for credit courses. The college has conducted an annual discipline cost analysis since the mid-1970s. The growth in developmental studies was relatively recent, so the area has fewer full-time faculty at the top ranks and, due to cost containment initiatives, a higher proportion of part-time, adjunct faculty. The collegewide cost per FTE for credit courses in fiscal year 1997 was $5,001. The comparable costs for developmental English, mathematics, and reading were $4,234, $4,385, and $4,985, respectively.

Summary

Among the major challenges facing PGCC and many other community colleges is the large number of students enrolling who are underprepared for college study. While students may be "at-risk" for a number of reasons including family and employment circumstances, deficiencies in the basic skills of reading, composition, and mathematics constrain the academic progress of many community college students. This article assessed the breadth of basic skill deficiency among PGCC students, described the developmental studies program in detail, and examined the impact of developmental needs on student achievement. Major findings can be summarized as follows:

- Two of every three entering fall students need remediation in at least one basic skill area.
- Mathematics is the area of greatest deficiency, with a majority needing remediation.
- Students entering PGCC with college-level skills are two and a half times more likely to graduate, transfer, or attain sophomore status in good standing than students needing developmental education.
- Students identified as needing remediation who complete all recommended developmental classes achieve at the same rate as students not needing remediation.
- Students participating in support services integrating mentoring and instructional support persist and achieve at higher rates than non-participants.

Like many open-admissions colleges, PGCC will continue to enroll a large proportion of students underprepared for college study—but it is not becoming a remedial education institution. In a typical fall term, 16 percent of PGCC students are enrolled in a developmental education class, and developmental education accounts for 12 percent of total college hours. The real significance of developmental education is the basic skills deficiencies it signifies and the hurdles these deficiencies place in the way of student progress. The finding from the fall 1990 cohort analysis—that students completing all necessary remediation achieved at the same level as students not needing developmental courses—is encouraging. Similarly, the findings that support programs targeting developmental students enhance student achievement suggest that college actions can positively influence student outcomes. However, only 16 percent of the fall 1990 students needing remediation completed their developmental coursework, and budgetary concerns constrain expansion of support serv-

ices. The challenge of facilitating the academic success of underprepared students remains formidable.

The Educational Development program is committed to improving developmental student success. It will continue to implement instructional innovations to engage students in their learning and advance critical thinking skills. The division seeks further collaborations with other campus offices, and welcomes ideas from other institutions that have had success advancing the academic progress of underprepared students.

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Improving Minority Student Success: Crossing Boundaries and Making Connections between Theory, Research and Academic Planning

Morris Keeton, Craig A. Clagett, Isa N. Engleberg

Overview

In a successful effort to cross boundaries and make connections between theory, research, and academic planning, Prince George's Community College (PGCC) and the University of Maryland University College's Institute for Research on Adults in Higher Education (IRAHE) developed a productive partnership using national and institutional research to link theory and academic planning. In doing so, both institutions developed new and highly successful programs responsive to the needs of a diverse population of adult learners. This article reports how multi-institutional, theoretical research guided targeted, institutional research that influenced the design and development of successful intervention programs at a large, predominantly African-American community college.

Theory, Research, and Planning

Theory-less planning in higher education can produce programs that work. The problem is that we often don't understand why they work. More importantly, we have few guarantees that such practices will work in the future, or in other contexts. In the rush to solve problems or plan strategically, college planners may institute what appear to be ready-made solutions that neither address the root causes of a problem, nor prepare for future challenges. In contrast, the intervention activities and programs discussed here were founded on theory, national educational research, and institutional research.

The literature on college and university planning emphasizes the critical role of research. Norris and Poulton (1991) observe that institutional research "searches out the emerging issues and challenges that require changes in strategy." They contend that information and analytical research support are much more than "an afterthought used to provide piles of

data for planning committees to chew on while the planning process unfolds." (p. 15-16) They continue:

> Properly designed... a program of analytical support can provide key environmental intelligence, can manage and identify the issues confronting the organization, and can move the process along by focusing attention and forcing decisions at appropriate junctures.

This article demonstrates the critical role national and institution-based research played in the development of sound educational theory and effective academic planning, particularly as applied to improving minority student success.

Educational Theory: The Diverse Students Program Literature Review

The Institute for Research on Adults in Higher Education (IRAHE) at the University of Maryland University College coordinated a six-year effort among ten colleges and universities searching for ways to improve both access to college and success in college of ethnically-diverse students. (The ethnic minority populations in institutions participating in IRAHE's Diverse Students Program—DSP—ranged from 12 percent to over 95 percent.) The DSP had five projects, one of which–the Study of Risk and Promise–will be discussed here. An extensive literature review influenced the research designs of all DSP projects.

Underlying the DSP and its Study of Risk and Promise was the premise that college efforts to attract and retain students take place within a tug-of-war between forces that enhance the odds of success and forces that work against success. This fundamental premise was stated years ago by Lewin (1951):

> Changing the ratio of a population of adults who enter college or who succeed once enrolled is a matter of changing a field of *countervailing forces* in which one set of forces works against the increase of the ratio and a second set of forces works toward the increase. The measure of the effectiveness of such a change can thus be defined as one of the degree of movement of the locus of the equilibrium point between theses countervailing forces [italics added].

The goal of the DSP projects was to develop Model Action Plans (MAPs) strengthening the forces working for student success and minimizing the forces working against success.

Cross (1981), in her study of adult learners, classified the forces enhancing or retarding success into three types: (1) *dispositional*, internal to the individual; (2) *institutional*, reflecting college policies and culture; and (3) *situational*, non-college factors including home, work, and community. The IRAHE leaders developed a multi-institutional research design involving a common survey and campus-specific MAPs to explore how colleges might influence or accommodate factors in the three domains (individual, college, and non-college environment) to increase access and success of adult learners of diverse ethnicity. Their research design was influenced by conclusions drawn from an extensive literature review (Sheckley, 1994):

> The synthesis of the literature reviews presents a vexing problem. On the one hand, we can easily document the problem that we are addressing. We have

> ample evidence that students from diverse populations do not enroll in the same proportions as do their Caucasian counterparts. Once enrolled, students from these diverse populations neither persist in their studies nor succeed in them to the degree evidenced by Caucasian students.
>
> When, however, we look for causes behind the discrepancies, the literature provides very little help. In general, the research indicates that very little difference exists between the Caucasian and the non-Caucasian groups when the studies sample students actually enrolled in the same colleges and programs. When differences are noted, the effect size is typically very small. Even the focus group discussions seem at a loss to surface factors that are distinctive to one ethnic group or another.

In an attempt to overcome the "vexing problem" and discover useful connections, the IRAHE review of the literature revealed two sets of factors interacting with opposing effects. The first set, related to student success, included an individual's degree of goal commitment, expectations, motivation, self-efficacy, prior academic success, and perception of the relationship between college studies and personal career and life goals. The second set, barriers to success, included time constraints, competing duties, limitations on financial resources, and resistance from family, employers, or primary others. The IRAHE literature review found that race/ethnicity *per se* was not a significant factor affecting student success. However, if prejudice in an institution's climate lowered students' sense of welcome or social integration, the IRAHE researchers suggested that this could affect the success rates of those subjected to the prejudice. Thus campus climate and the overall college environment (the institutional domain in IRAHE terminology) had to be added to individual characteristics and factors in the non-college environment to create the complete research design.

Hypotheses

How might the achievement of students from diverse populations be increased? Lead IRAHE scholars Keeton and Sheckley (1994) succinctly summarized their view by arguing that minority student success rested on teamwork between learner and college:

> On the students's part there must be aspiration and commitment, a sense of capability or self-efficacy, an adequate level of energy for application to appropriate tasks, persistence, and a readiness and skill in seeking and using help.
>
> On the college's part, there must be a challenge to learn with support and, to make the goal achievable, help with learning strategies, focus and coordination of effort, academically able faculty who teach gladly and well, an environment that motivates the student to use the institution's resources to learn and, of course, accessibility of those resources (including teachers, books, computers, financial aid, etc.).

Crossing the boundaries and making connections between the learner and the college became the focus of understanding why diverse students do or do not succeed at a particular institution of higher education.

The IRAHE Study of Risk and Promise

A major part of the IRAHE Diverse Students Program was the Study of Risk and Promise (Cubeta, 1997). This study was based on responses gathered by a written survey completed by 542 students from six institutions (two universities and four community colleges). The sample reflected the pooled student population of the six colleges and included approximately 21 percent African-Americans, 6 percent Hispanics, and 7 percent other racial/ethnic minorities. The ratio of female to male students in both sample and survey population was approximately 2:1.

The problem investigated was: How can successes of adult students from diverse populations in higher education programs be increased? This question was translated into a more specific one for study: What variables are most predictive of academic success in college, and how are these variables related to ethnic group membership?

Success, the study concluded, was not a single thing against which all students could be assessed. A student seeking immediate job training and employment will have a different measure of success than a student aiming for a Ph.D. Thus, programs and interventions designed to enhance student success must be tailored to the *type* of success being targeted. High grade point averages (GPAs) were not predicted by the same variables that predicted a high ratio of courses completed to courses attempted, nor by the same variables as those that predicted the number of semesters likely to be completed within a given time period. In developing interventions to heighten success, academic planners need to consider two questions: (1) Which forms of success do they wish to enhance? and (2) Which interventions are most likely to produce the different forms of success?

For example, the highest correlate of GPAs was the level of self-efficacy shown by the students; but the highest correlate of success on attempted credits was the students' approach to help-seeking. A student's level of self-efficacy is more difficult to raise than is that student's level of activity in seeking help from fellow students, faculty members, tutors, or advisors. Moreover, attempting to improve performance through multiple interventions on several kinds of success indicators can become much too expensive. The challenge for academic planners is designing programs to improve performance through a match or connection between the type of success sought and the appropriate intervention, given available resources.

A second finding of the IRAHE study was that students' total scores on the DSP questionnaire were not as instructive in distinguishing high risk from high promise students as were profiles derived from the scores of the students on a different set of variables for risk than for promise. The high promise students tended to score high on a combination of self-efficacy, perception of themselves as accepted members of the college community, motivation, and seeing themselves as able to control their situations. Reflecting on these findings, IRAHE scholars underscored that race and ethnicity did not explain differences in achievement (IRAHE, 1997):

> [I]t is not race per se that accounts for lower or higher success in learning, but other social, economic, and background educational conditions that impact some ethnic minority groups disproportionately. In other words,

> though we confirm that some ethnic minorities have lower success rates than Caucasians on some success measures, our data analyses show that it is not race or ethnicity that causes these discrepancies, but sets of other factors-in-combination that have comparable effects, whatever the ethnic group to which the individuals belong.

The IRAHE researchers further argued that factors other than demographics, such as student attitudes, beliefs, perceptions, and life situations, were important determinants of academic risk or promise:

> Our research has identified quite different profiles within ethnic groups between the low achiever and high achiever students. Analysis of the data yields unusually high correlations between one profile and low success rates and even higher correlations between a second profile and high success rates, regardless of the ethnicity of the individuals.

Much of the remainder of what was learned in both the study of earlier research and in the Diverse Students Program had a ring of common sense. For example, to be effective, outreach and recruitment of ethnic minority students needs to be timely, supported by ample resources and energy, and conducted by sources trusted by the prospective students and their families.

As common sense also suggests and as the IRAHE research indicated, distrust can offset any volume of repeated messages from sources suspected of inappropriate motives. Moreover information cast in terms that speak directly to the prospects' own priority needs will be more carefully heeded than data put in depersonalized catalogue form.

As is the case with many different groups of college students, ethnic minority students often need help prior to enrollment in choosing studies in which they can succeed, figuring out how their financial needs will be met, understanding how college studies will enable them to succeed in a career, and identifying what college will best match their needs and capabilities. If these aids are not available through family or school, the recruiting college will need to provide them.

Succeeding in college involves a balance of challenge and support: too little challenge and little is learned; excessive demands with minimal support can be a recipe for failure. With adults it can be especially complex to balance the demands of work, family management, study, and personal life.

Analyzing Student Success at PGCC

In a companion study and to correct a shortcoming of most earlier studies, researchers at Prince George's Community College (PGCC) in Largo, Maryland gave special attention to the fact that community college students often enter with learning and credentialing goals other than those typical of four-year college students. Since the IRAHE multi-institutional research showed that different types of success were predicted by different factors and could best be improved by interventions tailored to the particular kinds of success being sought, Prince George's approach focused on their own students' primary interests in college and utilized

a unique definition of achievement. This made the research of direct value to institutional planners in choosing how best to apply their funds to enhanced interventions.

Research Design. The PGCC research utilized a multi-stage study design using factor and cluster analyses to identify ten student profiles based on student academic intentions, preparedness, attendance patterns, course performance, and institutional support (Boughan, 1997). Each profile was further analyzed in terms of academic progress and achievement, socio-demographic background, and component factors to yield a comprehensive picture of who succeeds and who fails at this large, suburban, majority African-American open-admissions college. These findings were used to develop intervention programs targeting the most at-risk groups.

Definition of Achievement. Achievement was defined as the percentage of degree-seeking students graduating, transferring, or reaching sophomore status in good standing five years after initial enrollment at PGCC (Clagett, 1995). The study population was 2,386 first-time college students entering the college in fall 1990.

Factor Analysis. Preliminary analyses indicated extensive multicollinearity among the 90 variables available on college databases for model inclusion. Factor analysis was employed, resulting in the identification of ten factor scales. They are summarized in the Table 1, along with the proportion of variance in the achievement variable explained by each factor's direct and indirect effects (semi-partials were also calculated to assess each factor's direct effect) produced by a regression of all ten factors plus seven background variables (R^2=.469).

While the factor analysis was conducted primarily for data reduction purposes prior to a series of regression analyses, the factors that emerged included a few surprises for the PGCC research team:

1. Five variables defined a factor (COMMIT) that was interpreted to represent student commitment to their studies: a flag for *both* day and evening course attendance, a flag for *both* campus and extension location attendance, enrollment in the last term studied, attendance during the summer, and change in program major. High correlations among these variables suggested extra effort in pursuing classes at PGCC.

2. Receipt of Pell Grants, participation in PGCC academic support services, and enrollment in career planning and study skills courses formed a factor (SUPPORT) distinct from college preparedness or developmental coursetaking.

3. Good academic standing in the first year correlated with consecutive enrollment in the first three major terms to form a factor representing early term survival and progress, characterized by the team as a successful LAUNCH.

4. Two factors emerged relating to college preparedness and remedial coursetaking. The first factor (PREPARED) was defined by high placement test scores, especially in mathematics, and *completion* of all required developmental courses. The second factor (REMEDIAL) re-

flected high incidence of developmental coursetaking and re-taking, low placement test scores in multiple skill areas, and at least one term of academic probation.

Table 1. Factor Scale Interpretation and Achievement Variance Explained

Factor Label	Interpretation	Defining Variables	r^2
COMMIT	Committed to studies	Attended both day/evening Attended both on/off campus Enrolled last term of study Attended summer session(s) Changed program major	.24
PERSIST	Attendance persistence/continuity	Enrolled last term of study Number of major terms attended Continuous enrollment (no stop out)	.21
LAUNCH	Early term survival and progress	Enrolled first three major terms Good academic standing first year	.20
PERFORM	Course performance/academic standing	Cumulative grade point average Earned/attempted credit ratio Proportion terms in good standing	.16
SUPPORT	Financial and academic support	Pell Grants received Minority Retention Program/SSS participation Career planning/study skills courses	.12
LOAD	Course load carried	Mean major term course hour load Credit hour load in first term	.10
PREPARED	College preparedness/completion of remediation	Developmental program completed Math placement test score Mean placement test score	.10
REMEDIAL	Need for basic skills remediation and stalled academic progress	Number of basic skill deficiencies Developmental courses in first year Number of developmental courses repeated Restricted academic status/probation No credit courses attempted	.10
JOBMOTV	Job-related attendance motives	Job/personal enrichment enrollment reason Occupational curricula	.03
TRANSEEK	Seeking bachelor's degree	Transfer curricula	.01

The other factors that emerged were straightforward and expected. These included factors representing steady enrollment, course performance, credit hour load, and curriculum choice/reasons for attending (job or transfer orientation).

Regression Analyses. Several regressions were run to assess the contributions of various combinations of factor scales and background variables to explaining student achievement (see Table 2). Tinto's (1987) assertion that academic and social integration are key to understanding student persistence has found support in most studies at four-year institutions. However, a growing body of literature suggests that social integration is *not* associated with persistence at two-year colleges. Pascarella and Chapman (1983), Fox (1986), Nora, Attinasi, and Matonak (1989), and Halpin (1990) found academic integration a significant influence on community college student persistence, but social integration either not associated or negatively associated with persistence. In their study at a public research university, Eimers and Pike (1997) found the importance of academic integration particularly acute for minority students. The PGCC study found support for the academic integration hypothesis, confirmed the findings of previous studies that socio-demographic background variables were not important correlates of achievement, and posited the existence of an important *personal motivation* component of academic achievement. This last component was unusual in that it derived from behavioral data rather than survey-based attitudinal scales.

Table 2. Alternative Regression Models and Achievement Variance Explained

Regression Model	Independent Variables Included	R^2
Whole model	All 10 factors plus 7 background variables	.469
Academic integration	LOAD, PERFORM, PERSIST, REMEDIAL	.355
Good start	PREPARED, LAUNCH	.256
Personal motivation	COMMIT, SUPPORT	.249
Socio-demographic	SES, race, gender, age, marital, entry timing, HS quality	.104

Cluster Analyses. Institutional research, in contrast to educational research, is less interested in developing generalizable theory but rather most concerned with guiding college-specific policies and programs. Theoretical models of student persistence and achievement can account for about half of the variance (Pantages and Creedon, 1978), and individual independent variables typically 14 to 16 percent (Cubeta, 1997). Not only do our best theories fail to account for half of the variance in student progress and achievement, the factors that affect persistence and achievement vary across institutions (Noel, 1978; Valiga, 1980). Thus each college must conduct research on its own students to guide intervention strategies to improve minority student achievement. To target programs to those

most in need and most likely to respond to interventions, a campus must accurately *profile* its student body. Cluster analysis is useful for this purpose.

Using scores on the ten factor scales from the factor analysis, the cluster analysis yielded ten student clusters or study profiles (see Table 3).

Table 3. Selected Attributes of Student Profile Clusters
Row Percentages

Cluster	N	African American	SES Index	Skill Deficient	Good Start	Achievers
Dean's List	233	26	61	32	77	76
Scholars	158	42	45	40	79	68
Collegiates	342	25	62	36	73	66
True Grit	236	60	47	67	46	43
Pragmatists	106	41	50	54	55	30
FT Strugglers	134	80	34	92	73	25
PT Strugglers	254	49	49	67	54	17
Vanishers	168	35	55	37	12	11
Unpredareds	369	80	42	100	34	<1
Casuals	386	52	49	33	10	<1
Total cohort	2,386	50	50	56	56	31

Three clusters were of particular relevance to this study of minority student achievement. The True Grit cluster, comprising nearly 10 percent of the cohort, overcame basic skills deficiencies and below-par high school backgrounds to attain above-average achievement levels—largely through strong motivation (high COMMIT scores). A fourth of the students in the Full-time Strugglers cluster, the least advantaged group (lowest socio-economic status, poorest high school backgrounds, highest mean REMEDIAL factor score) managed to achieve, with institutional assistance (with a mean SUPPORT score twice the cohort average). The Unpredareds, similar to the Full-time Strugglers in socio-demographic background, need for remediation, study goals, curriculum choices, and course loads, had dramatically less success—less than one percent classifying as achievers. The Full-time Strugglers scored substantially higher on four factors: SUPPORT, COMMIT, LAUNCH, and PREPARED—the latter reflecting completion of developmental requirements. (See Table 4.)

Table 4. African-American Student Profile Clusters Mean Factor Scores (Indexed)			
Factor	True Grit (N=236)	FT Strugglers (N=134)	Unprepared (N=369)
PREPARED	114	91	30
LAUNCH	80	102	74
COMMIT	154	109	68
SUPPORT	91	210	81
Achievers	43%	25%	<1%

Correlates of Success of At-risk Ethnic Minorities at PGCC. What factors differentiated relatively successful from unsuccessful at-risk minority students at PGCC? Personal commitment and motivation, financial aid, participation in academic support services, completion of developmental requirements, and attendance in each of the first three major terms (fall-spring-fall).

Largely based on these findings, Prince George's Community College launched an initiative for crossing the boundaries and making connections between theory, institutional research, and academic planning in two areas: programming for at-risk students and academic curriculum development.

The R^3 Academy

The R^3 Academy was created as a direct result of analyzing the factors differentiating successful from unsuccessful at-risk, minority students at Prince George's Community College. In the fall of 1997, the R^3 Academy was created as a pilot program for students needing Developmental Math 003 plus remedial English and/or reading. Based on the learning community concept and incorporating all of the positive factors identified by the research, the Academy was designed to test whether highly-targeted college actions could improve the academic achievement of its at-risk minority students.

The R^3 Academy is a two-semester program of developmental and credit instruction. A group of selected students takes the same classes, working as a team with faculty, counselors, and advisors in a learning community. R^3 stands for *Reasoning*, *Readiness*, *Real World* rather than the expected reading, writing, and 'rithmetic. Its goal is to develop critical learning skills to prepare students for college level courses and real life issues.

Although only operating as a pilot program for 38 students needing developmental math plus remedial English and/or reading, the R^3 Academy has shown impressive results. The

pilot program achieved a 97 percent fall-to-spring retention rate, compared to 60 percent for all new freshmen—including those not requiring developmental course work. After two semesters, the retention rate was 84 percent. As a result and in recognition of the pilot program's success, the college's Board of Trustees approved the R^3 Academy as one of its five strategic priorities for the 21st century.

Concluding Observations

The literature of higher education abounds with case studies of programs that work at *other* institutions. The problem is that we don't know whether the programs that work at neighboring or seemingly similar colleges will work at our institutions. By linking theory and institutional research to planning, we can have greater confidence that our decisions will be good ones and will serve the needs of diverse students.

The following steps are recommended in order to cross the boundaries and make connections between theory, research, and planning:

- **Educational Theory**. The theoretical literature and national research should be consulted to guide institutional research and suggest possible models for intervention programs.
- **Institution-Based Research**. Campus researchers should conduct sophisticated, institution-specific research focused on their college's needs and characteristics.
- **Research-Based Planning Questions**. Researchers, after carefully analyzing national and institutional data, should frame research-based questions for college planners.
- **Research-Based Action Plans**. Planners should work with researchers and other college administrators and faculty to implement, track, and assess selected action plans.
- **Ongoing Assessment**. Outcome assessments should be used as a basis for program revisions and additional research and analysis.

Colleges and universities are environments that express different kinds of commitments and expected outcomes. Some institutions promote and foster intellectual growth, some emphasize social life and community, others press for a sectarian or ideological commitment. However, a college that wishes to serve ethnic minorities well must express this aspiration in its mission and goals, in its strategies for furthering the aspirations of such students, in staffing itself with people attuned well to this purpose, and in planning that crosses boundaries and makes connections between theory, research, and academic programs.

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The Changing Picture of the Legality of Affirmative Action Programs in Student Admissions and Financial Aid

Shin Lin

Introduction

There is perhaps no social issue in this country more pressing and more controversial than the subject of race-targeted affirmative action programs. In higher education, our colleges and universities have been heavily reliant on such programs in admissions and financial aid to increase enrollment of students recognized as under-represented minorities (African Americans, Hispanic Americans, and Native Americans). On the other hand, recent court decisions have made it increasingly difficult for these programs to withstand legal challenges.

In general, our institutions of higher education are committed to increasing the number of under-represented minorities for the following reasons. First, having a campus population with people from many different backgrounds (e.g., racial, cultural, social, economic, geographical) provides a richer educational environment that can better prepare students for the challenges of an increasingly diverse national and international workplace and community. Second, our democratic process would be enhanced if all segments of our population are better educated so that they can participate more fully in the debates and decisions in our democratic society. Third, because of the higher growth rates of under-represented minorities, more of this segment of our population will have to receive high level training in our colleges and universities if this country is to keep up with future demands of an increasingly technical workplace.

The above considerations are generally based on statistics from many studies and projections. For instance, under-represented minorities make up about 20-25 percent of our nation's population, but less than five percent of students in graduate programs (excluding those in professional schools) at leading private research universities on the East Coast (data from the Leadership Alliance, which includes the Ivy League schools, New York University, and Johns Hopkins University). Nationwide, roughly one percent of doctoral degrees

awarded annually are to African Americans, and of those, only about a hundred Ph.D. degrees are in the sciences and engineering. In the state of Maryland, the population increase of under-represented minorities is projected to reach close to 60 percent of the total population growth in the next ten years. With student enrollment of under-represented minorities leveling or even declining (in the case of African American males) in recent years, colleges and universities must re-double their efforts to recruit and retain more students in this category.

Given the increasingly strict criteria for judging the legality of affirmative action programs, what can colleges and universities do to fulfill the important social need to increase the presence of under-represented minorities on their campuses? In the Spring of 1996, the Maryland Association of Higher Education sponsored a symposium entitled "How to Achieve Campus Diversity in Today's World," hosted by the Johns Hopkins University at its Homewood Campus. While recognizing the importance of diversity of the entire campus community, this symposium focused on student admissions and financial aid. This article summarizes the presentations and discussions on this topic, led by a panel of legal experts: William F. Howard, J.D., then serving as an Assistant Attorney General and Deputy Chief of the Educational Affairs Division of the Maryland Attorney General's Office; Howard Kallem, J.D., a supervisory attorney in the Office of Civil Rights at the U.S. Department of Education; and Andrea Hill Levy, J.D., Executive Director for Administration of Graduate Studies and Research in the Graduate School of the University of Maryland at College Park, and former University Counsel in the President's Legal Affairs Office. The list of symposium speakers also included Francis Coates, Director of Affirmative Action at Montgomery College, who focused on issues related to the hiring of faculty and staff.

Legal Principles and Historical Perspectives

William Howard explained that the basic principles of law that apply to this area come from two sources: (1) the 14th Amendment of the U.S. Constitution added after the Civil War, which states that no one be denied equal protection of the law, and (2) Title VI of the Civil Rights Act of 1964, which requires that no one be denied the benefits of or excluded from participation in a program that receives federal financial assistance on the grounds of race, color, or national origin. In general, the former applies to all public institutions, while the latter applies equally to both public and private ones that receive federal financial assistance. In practice, these two laws are interpreted essentially the same way and have the same meaning and effect.

The laws on equal protection and on non-discrimination in this area were developed in several phases. In the late 1800s, the concept of "separate but equal" became the minimal test for judicial scrutiny based on the 14th Amendment. In the middle of this century, the quality of the separate facilities came under closer scrutiny. Separate facilities must not only be equal on paper, but equal in fact. An example is the ruling that a new law school started for black students by the state of Texas was not equal to the highly regarded and long established law school attended by white students at the University of Texas. Four years later, the court ruled in the case of Brown vs. Board of Education that institutions not only have an affirmative duty to have non-discriminatory standards for admissions, but also the affirmative duty to desegregate and to eliminate the prior effects of segregation. In recent years,

the courts have become more concerned that the use of race itself is discriminatory, and that entitlements granted to a specific racial group to correct past discrimination may infringe on the rights of other individuals to equal protection as guaranteed by the 14th Amendment.

Legal Standards of Review

Howard went on to explain that any explicit use of race in financial aid or admissions decisions will trigger "strict" or "close" judicial scrutiny. In other words, race is a suspect classification of law, and triggers a presumption of invalidity and the presumption of very close analysis before it will pass a judicial review. This level of judicial review is different from the lower levels of review of equal protection or non-discrimination cases not involving race. A rational-basis test is the lowest level of judicial scrutiny, which applies to most laws. If a program or statute is not drawing a line or a distinction based on race or any other suspect classification, the court merely examines whether the program had a plausible reason for drawing that line. An example would be state regulations on minimum age for a driver's license. These regulations are legal because it is reasonable that a person must possess a certain level of maturity to drive a car. Only if a statute has standards that are deemed arbitrary, capricious, or self-contradictory would it be struck down by a reviewing court. The second level is intermediate scrutiny, which is mostly used to analyze programs and statutes that draw lines based on gender. Gender is a somewhat suspect classification, but it is not as suspect as race or national origin. The courts usually require the state or federal government to have an important governmental objective, and that the means of accomplishing that objective be reasonably tailored.

There is ample evidence that the level of scrutiny tends to determine the outcome of the results. In the case of rational-basis scrutiny, the statute is most likely to be upheld while strict scrutiny almost always results in the striking down of a statute. To satisfy strict scrutiny standards, there must be two components: a compelling state interest and narrow tailoring of the means to achieve that interest.

Compelling Interest and Narrow Tailoring of the Means to Achieve that Interest

How could one predict whether a program or statute has the compelling interest required to satisfy a strict scrutiny review? Howard said that this is something to be decided by courts in individual cases and cannot easily be spelled out in principle. A goal that has been put forward as a compelling interest is achieving diversity in the student body for its own educational sake. While ruling against racial quotas used by the University of California, the U. S. Supreme Court voted by the slimmest of margins (4-1-4 decision) to accept this goal as a compelling interest in the 1978 Bakke case and to allow race to be used as one of a number of criteria for student admissions. However, the 1996 decision of the 5th Circuit Court of Appeals against the use of race as one of the criteria for admission into the University of Texas law school (the Hopwood case) tends to narrow the scope of that principle, if not eliminate it (see below). This means that there is only one compelling interest that is readily acceptable at this time: the remedial purpose of correcting a wrong of the past or a currently established violation of state or federal law. Some examples where this compelling interest

prevailed are the many affirmative action cases involving employment, some of which had already been upheld by the U. S. Supreme Court. If an individual or a class of people was discriminated against in an employment context on the basis of race, then that person or class should be entitled to a remedy that in part takes race into consideration.

In cases involving affirmative action programs for student admissions and financial aid, an institution must prove that it has discriminated in the past, and that present effects are linked to that past discrimination specifically. Because present laws prohibit overt discrimination, the purpose of affirmative action programs has been reduced to remedying the present effects of past violations. Both the 4th and the 5th Circuit Courts of Appeals have looked very carefully at this point in their decisions against specific affirmative action programs in the Podberesky (see below) and Hopwood cases, respectively, and found that many of the instances put forward as present effects are not caused or linked to past discrimination. In addition, the courts also concluded that certain effects are too amorphous and so generalized that they should be regarded as products of societal discrimination, and therefore not the responsibility of any one institution.

The courts also ruled that the following do not qualify as compelling interests to justify affirmative action programs. In the 1978 Bakke decision, the Supreme Court rejected as compelling interest the goals of reducing the historic deficit of traditionally disfavored minorities in medical schools and in the medical profession, societal discrimination, and increasing the number of physicians that will practice in communities currently underserved by the profession. In the Hopwood case, a district court upheld the affirmative action program in admissions at the University of Texas law school (later reversed by the 5th Circuit Court of Appeals), but also rejected several rationales proposed by the school: providing a first class legal education to future leaders of the state bar, offering opportunities for admission to members of the two greatest minorities in Texas, and to achieve compliance with the American Bar Association and the American Association of Law Schools standards of commitment to pluralistic diversity in law school student populations.

Even if a program or a statute has a legally acceptable compelling interest, it must be narrowly tailored to serve that interest. A major consideration of the courts is for how long the remedial action should be applied. This question was raised poignantly in the 4th Circuit Court's decision in the Podberesky case against a race-restricted scholarship program at the University of Maryland. Another question is what present effect is the program designed to correct? The Podberesky and the Hopwood cases showed the high standards used by the courts in judging the validity of these effects in the first place.

Guiding Principles Issued by the Office of Civil Rights

Howard Kallem presented a set of principles issued in 1994 by the Office of Civil Rights of the U.S. Department of Education (the agency to enforce compliance to Title VI) in the area of affirmative action programs in financial aid. These principles are also generally applicable to programs for student admissions. Institutions had until May 24, 1996 to comply with these principles, and the Department was available to help institutions design programs that were legally acceptable. Kallem said the Department recognized affirmative programs

as an effective way to fight discrimination, and stood behind the principles despite the court rulings in the Podberesky and the Hopwood cases.

Aid for disadvantaged students. This is permitted because the principle recognizes that disadvantage is a legitimate non-discriminatory basis for financial aid awards. As long as race is not explicitly used as a requirement, a program is in compliance even if the aid goes disproportionately to people of a particular race. An institution can define disadvantage in a number of ways without triggering strict judiciary scrutiny: socio-economic, educational, geographical, etc. Specific examples include granting aid to students from inferior schools, those from single parent families, and those who are the first generation to attend college. While the programs based on this principle may not achieve exactly the effect of race-based programs, the principle is probably the easiest to be justified legally.

Governmental funds. This principle permits institutions to use financial aid created by federal statutes. However, the Supreme Court has ruled that federal and state financial aid programs are subject to the same strict scrutiny analysis as non-governmental ones. As a result, the Clinton administration is closely reviewing all of the many federal programs that award money based on race or national origin and will make necessary changes to meet strict scrutiny standards (the "mend but not end" policy). Since most programs funded directly by Congress are not race-targeted, they are generally unaffected in this context.

Remedy for past discrimination. If the state or an institution has strong evidence that it has discriminated in the past, a program to remedy this situation is legally acceptable. However, the remedial action must be narrowly tailored to meet this goal. The Podberesky case set a very high standard for evidence of the present effects of past discrimination, but did not necessarily invalidate the principle.

Creation of diversity. Institutions can define their own diversity interests under the First Amendment to the U.S. Constitution. Many college administrators agreed that they had not paid enough attention to the framing of a diversity interest so that it could withstand challenges in court. Diversity may include a college's unique history, location, mission, etc. An acceptable diversity program must have considered other factors besides race in achieving its goals. The program must be flexible, with no numeric quotas, and must make exceptions where appropriate. Diversity must serve a higher purpose, rather than be an end in itself. This principle must be revisited periodically (preferably annually) to make sure that timely adjustments are made to meet changing needs. The institution should focus on the educational benefits of diversity to the student body as a whole, including the majority students, so that the burden on those not in the programs is minimal. (This is usually the case since only three or four percent of aid available nationwide is race-targeted). The program must be narrowly tailored to its purpose and the school must first show that race-neutral efforts would not help the achievement of the goals.

Private gifts. Colleges and universities can administer financial aid from private donors, only when such aid is consistent with one or more of the above principles. However, a private donor can give money to any group of people (including racial groups) and not be bound by the rules of Title VI. In this case a school can have information available about private aid programs, but it cannot promote or administer the programs.

Historically black institutions. Historically black colleges and universities are allowed to participate in race-targeted aid programs for black students established by third parties, and in which other non-historically black colleges also participate (e.g., the National Achievement Scholarship Program). This provision is necessary because these institutions definitely cannot justify their programs on the basis of past discrimination or to create more diversity. Congress and the executive branch recognize the unique role in history of these institutions, and of the discrimination against them and their students. Of course, these schools can use any of the other principles stated above if they want to reach out to any other groups of students.

Impact on the State of Maryland

Adrea Hill Levy described that a few years ago Mr. Podberesky, who is white, sued the University of Maryland at College Park for violating his rights because he was excluded from a financial aid program restricted to black students (the Banneker Scholarship Program). The program therefore had to be defended on the basis of achieving a compelling interest without intolerable burden on the majority of the students. Because the theory of present discrimination was not used by the University of Maryland, the institution had to prove that the present effects of past discrimination justified race-targeted aid. The 4th Circuit Court did not challenge the principle of using race-targeted aid to remedy the effects of past discrimination, but was not satisfied with the evidence presented by the University that such effects still existed. The court did not address the goal of achieving diversity in its decision. In March 1995, the Supreme Court chose not to review the case, thus making the 4th Circuit Court's decision the law in that circuit.

What are the important implications of the Podberesky case? First, only race-targeted programs in institutions within the 4th Circuit are affected by the court's ruling (i.e., Maryland, Virginia, West Virginia, North Carolina and South Carolina). Levy and Howard both stated that the case raised by an enormous degree the standard for quantity and quality of evidence to pass strict judiciary scrutiny. Levy said that the University of Maryland had therefore initiated an internal review of all programs to see if they could be defended legally, or have to be modified or eliminated. The University proceeded on the basis that aiding disadvantaged students and achieving diversity were legally acceptable goals, and that it could use race as one of, but not the sole factor, in its programs. The case also heightened the awareness of the requirement for diligent self re-evaluation of the necessity of the programs. Therefore, a periodic review procedure was also established at the University of Maryland to examine whether the purposes and criteria of the programs continued to be valid as time goes on, and that the programs were narrowly tailored to meet these goals.

Current Status and Conclusions

Since the Spring 1996 symposium sponsored by the Maryland Association of Higher Education, a number of significant changes have occurred in the area of affirmative action programs for financial aid and student admissions. To cope with what they regard as the current legal standards, colleges and universities have generally taken the following approaches:

1) Elimination of affirmative action programs. In 1995, the Regents of the University of California voted to eliminate all such programs for student admissions and financial aid and for hiring of staff. Their position was greatly bolstered by the subsequent passing of a statewide initiative (Proposition 209) in the November election of 1996, prohibiting race and gender preferences in public hiring, contracting, and education.

2) The "wait-and-see" approach. Institutions in Maryland are presently affected only by the decision in the Podberesky case because they are within the jurisdiction of the 4th Circuit Court. For the same reason, they are not affected by the 5th Circuit Court's ruling in the Hopwood case against any use of race to achieve the goal of diversity. Since it is widely anticipated that the Supreme Court will revisit the subject of affirmative action in education in the near future, many institutions around the country are waiting for further legal developments before making major changes in their programs.

Another reason for not making changes at this time is the conflicting requirements from different branches of the federal government. For instance, in the Spring of 1997, the U.S. Department of Education warned the State of Texas that it could lose federal financing if it ended affirmative action programs in its university system. A month later, the Department reversed itself, saying that the 5th Circuit Court's decision on the Hopwood case took precedence over the directives of the Department. Another example is that the National Institutes of Health continued enforcing its requirement that graduate programs supported by their training grants must not only have a strong affirmative action component, but also an upward trend in the number of under-represented minorities participating in the program. This stringent requirement is obviously inconsistent with some of the principles issued by the Department of Education as described above, and is in conflict with some of the decisions by the courts.

3) Modifications to existing programs. The general assumption of those in legal circles and among college administrators is that the goal of increasing diversity as approved by the 1978 ruling by the Supreme Court in the Bakke case is still legally acceptable as a compelling interest as long as race is only one of a number of criteria used. The Maryland Higher Education Commission passed a resolution endorsing continued use of affirmative action programs and the concept of diversity in higher education. Consistent with the diversity principle issued by the Department of Education, the Association of American Universities, made up of 62 of the nation's top research universities, issued a joint policy statement in April 1997 on the beneficial effects of diversity and the need for use of race as one of several criteria in student admissions. What is standing in the way of this approach is the 5th Circuit Court's ruling on the Hopwood case in March of 1996, that the use of race as even one of many factors for achieving diversity is unconstitutional because it tends to stereotype people within a racial group. Texas appealed to the Supreme Court two months later, but the Court refused to take the case, so college administrators are now anxiously waiting for a clarification by the Court of the principle of allowing race to be one of several criteria in achieving diversity.

Another example of changes in policy in response to legal considerations is that the National Physical Science Consortium, made up of 111 major Ph.D. granting universities and 31 public agencies and private employers, started accepting applications from white males and Asians

for their Graduate Fellowships for Minorities and Women two years ago. The Consortium, however, is careful to state that they will not actively recruit people in these categories.

Finally, what are the effects of the recent banning of affirmative action programs in student admissions and financial aid in Texas and California? The law schools in these states saw a precipitous drop of 50 percent to 80 percent in the number of African American and Hispanic students admitted to the Fall 1997 class as compared to the year before when affirmative action programs were still in operation. However, according to a survey by *Science* published in August 1, 1997, admission of under-represented minorities in the sciences, engineering and medicine, with some exceptions, had not fallen as drastically as in the law schools, and there was an increase in some programs (e.g., UCLA medical school). Many reasons have been cited to explain these results, including the persisting requirement for affirmative action by the National Institutes of Health, which provides a significant portion of the funding of graduate students in the biological and biomedical sciences through its training grant programs. Interestingly, at the University of Texas Southwestern Medical School, a change in preferential treatment on the basis of economic and educational disadvantage instead of race yielded very few under-represented minorities, apparently because these applicants often come from middle class families. Similarly, the University of California at San Diego projected that this type of change in admission criteria would increase the number of Asians and work against middle class black and Hispanic students in the applicant pool. One strategy used by some institutions to overcome all of these difficulties is to focus less on admissions criteria, and more on the expansion of the minority applicant pool by means of outreach programs targeting the entire student population of institutions with high minority enrollment.

In conclusion, conflicting court decisions and directives from the Clinton administration have made the picture of affirmative action programs in financial aid and student admissions more confusing than ever. Adding to the problem is the lack of simple alternatives to the use of race-targeted programs to increase enrollment of under-represented minorities. Many surveys now show that a majority of Americans are against affirmative action programs, and there are strong disagreements on the desirability of the recent results of the elimination of such programs in California and Texas. This complicated picture is not expected to clarify until the Supreme Court makes a definitive ruling on one or more of the pending cases related to this topic in the near future.

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Two Weeks vs. Two Years of Developmental Mathematics

Roxann King

Three-fifths of the first-time students at Prince George's Community College (PGCC) require developmental mathematics below intermediate algebra. Half of the high school graduating seniors who attempt the placement test each year require developmental mathematics below intermediate algebra.

In 1995-96, the county was looking forward to the first class of students who had completed elementary algebra and geometry in an enhanced 12-year mathematics program known as Equity 2000. During that school year a series of meetings was held by a joint committee of PGCC developmental and county high school instructors and administrators. They were addressing the problem of low placement.

There was blame being issued from both groups. The community college instructors expressed belief that the students were coming to college never having been taught basic skills. The public school instructors accused the college of placing hurdles in the way of success. We, as it turned out, were wrong in our assessment of poor teaching. And we have learned that we can assist students in achieving placement standards.

At each of three area high schools a voluntary group of juniors who had completed the required courses was given the college placement test in December, 1995. The results were very discouraging, with over half placing in developmental math. Similar results were observed in English and reading. The students were virtually indistinguishable from those before Equity 2000.

A review course was developed in each area for participating students, with the promise of an opportunity to retake the placement exam after the course. This was at least partially an attempt to reward these students for their participation in the testing. Twenty-hour reviews were held in late April and May, after which the students were retested. English and reading gains were marginal, but the gains in mathematics were outstanding. Most students were able to place two or more courses higher after taking the review course in arithmetic and algebra.

Half of the students were able to place out of developmental math (elementary algebra) entirely after the review course. Clearly the students had at one time learned the mathematics well, but they had forgotten it from disuse. Also, in less than one year without math, they had managed to forget this math. The Equity 2000 program was vindicated. All of us were also aware that these students would probably forget this math again before graduation unless they were encouraged to continue with math during their senior year.

Faculty at the college were excited by the results. They immediately began planning two versions of the review to be held in August of 1996 with both day and evening sessions, in close proximity to the actual resumption of classes.

We now offer three review courses: the Arithmetic Review, five two-hour sessions reviewing through pre-algebra with placement testing on the sixth day; the Arithmetic and Algebra Review with four additional sessions directed at elementary algebra before the placement testing on the tenth day; and for students placing beyond elementary algebra, an Intermediate Algebra review, which comprises ten hours. The results have continued to be very similar to the first high school trials.

Since 1996 we have held sessions each August and January. At the end of the first semester we determined success in the follow-up math courses. Those students who placed into intermediate algebra (in-house credit at PGCC) had better than average pass rates. Those students who enrolled in developmental levels of math had average success.

Although students have requested early summer sessions, we plan to continue with these sessions in close proximity to the major semesters. Except for Intermediate Algebra, the sessions have had no prerequisite other than a personal awareness of prior success in the area reviewed. Approximately one-third of the students take the review for reasons unrelated to taking a math course at PGCC. Many of these students complete the course with excellent placement. We have no intention of excluding anyone who feels a need to refresh mathematics learned in the past.

Design

Creating the course involved collaboration with Dyanne Lyon, dean of Continuing Education at Prince George's Community College. She wrote the proposals for the high school and college versions. It was easy to receive MHEC approval quickly by offering these noncredit review courses through Continuing Education. At a cost to the student of around $65 for the Arithmetic Review, $120 for the Arithmetic and Algebra Review, and $65 for the Intermediate Algebra Review, profit is not generated but costs are met. Advertisements appear in the schedule of credit classes for fall and spring semesters.

Approximately two hundred students are expected in the August review courses for 1998. Students register for one of three sessions with enrollments allowed to increase until the course begins. Students tend to register late and the number of students per instructor has been kept to twenty. Additional instructors have been readied each semester in case enrollments increase. Arithmetic Review students are equally spread among the instructors, as are Arithmetic and Algebra Review students. Some who originally plan to take only the Arith-

metic segment, change their minds and reregister as Arithmetic and Algebra students, continuing into the second week of the course.

The materials for the Arithmetic and Algebra Review were developed by Cynthia Roberts, a former developmental mathematics adjunct faculty member, using test generators provided by Addison-Wesley Publishing Company. Two to four questions were included for each skill taught in our developmental mathematics program. Two entire texts are represented as a series of about two hundred problem sheets for approximately $8. All answers are included. About half of the problems are worked in the sessions, the other half are for additional practice. Martha Lisle, a retired math faculty member, wrote the problem collection for Intermediate Algebra, which only includes problems beyond the scope of elementary algebra. About thirty problem sheets are provided at no cost to the student.

Alternative versions of the paper-and-pencil placement tests were developed in-house and are apparently valid since the students perform comparably in the subsequent mathematics courses.

The instructor and student receive a schedule, such as the partial schedule below, which is rigorously followed.

Day 7	Systems of Equations Polynomials and Rational Expressions
Day 8	Solving Word Problems Graphing Lines
Day 9	Operations with Radicals Quadratic Equations Review
Day 10	Placement Testing

Tutors are available for an additional half hour both before and after class and assist each instructor during the class. They also assist in administering the testing at the conclusion of each course. The learning lab with various computer and video support materials is also made available to the students outside of course time.

A developmental mathematics faculty member serves as coordinator and is compensated, along with all teachers and tutors, through Continuing Education.

Future

We continue to look for ways to shorten the time needed for developmental work, which is powerfully linked to improving retention and student success in college. We have learned that lower level mathematics, unlike English and reading, is very easy for students to forget and equally easy to refresh. How long are our placement tests really valid at these levels before review is advisable? Would we not have much better success with our students if appropriate review occurred just prior to taking a course? We hope to have some concrete answers soon.

Roxann King is professor of Developmental Mathematics at Prince George's Community College.

Study Skills Make A Difference in Developmental Mathematics

Yvonne Seon and Roxann King

In the spring of 1995, faculty at Prince George's Community College (PGCC) confronted the fact that many students lacked the skills to be successful math learners in a college environment. While the overall pass rate for developmental mathematics hovered around 50 percent, there were great variations among the performances of evening students and daytime students depending on schedule. Daytime Monday-Wednesday-Friday sections of these courses had pass rates of about 30-35 percent, with very large enrollments. Tuesday-Thursday sections had pass rates of about 50 percent, with much lighter enrollment. Evening classes had pass rates of about 70 percent, with moderate enrollments. The pass rates for Monday-Wednesday-Friday sections had been decreasing over a three-year period starting in 1993.

The typical student at PGCC was a twenty-eight year old minority student enrolled part-time and employed part-time. During recent fall semesters about half of the first-time credit students were students who had just finished high school. Slightly more than one fourth had been out of school for five years or more. Although enrollment was open, matriculating students were required to take placement tests in English, reading and mathematics.

In fall 1995, 70 percent of the new students that were tested needed remediation in at least one area. Sixty-one percent of these students required from one to four semesters of mathematics remediation at or below the level of elementary algebra. Sixty-seven percent of the 1995 county high school graduates required remediation, 53 percent in math. Of the 1990 entering freshmen, only 14 percent were able to finish their required developmental mathematics within four years.

In fall 1995 the average pass rate for college courses was 75 percent. In developmental mathematics, basic arithmetic, pre-algebra, and the first semester of elementary algebra had pass rates of 48, 44, and 47 percent respectively. In these courses, students taking Monday-Wednesday-Friday daytime classes had pass rates of 33, 34 and 28 percent respectively.

In the Monday-Wednesday-Friday daytime classes more of the students were recent high school graduates, many of whom were also enrolled in other developmental courses. A significant amount of disruptive behavior occurred in Monday-Wednesday-Friday daytime classes. This was not characteristic of other classes at the college. The math preparation of the Monday-Wednesday-Friday daytime students matched that of their evening counterparts. However, many of the former group lacked well-defined goals and the study skills necessary for success.

History of the Project

In 1995 the college focused on the retention of at-risk students as an institutional priority. In August the counseling and advising staff and the developmental mathematics faculty initiated a two-part intervention program to help these developmental mathematics students. Each developmental math instructor was to be paired with a counselor. At-risk students were to meet with their instructors and these counselors to devise strategies for success. In addition a series of workshops was planned to support student learning in mathematics.

The campus already had two models for the workshops. One was a course on *Becoming a Master Student*, which was having observable impact on student retention. The other was a one-credit *Success In Math* course which had been recently piloted with a volunteer group of students. In addition, several of our faculty had experience teaching a one-credit course at the University of Maryland on math study skills and math anxiety.

The series of interactive workshops that was developed addressed the following topics:

- Time management and goal-setting
- Math anxiety
- Reading and understanding math
- Using a scientific calculator
- Note-taking and study skill for math
- Using a graphing calculator
- Math test-taking skills
- Memory aids for math

All involved a lot of student participation and group work.

Initially, in spring of 1996, a different topic was offered each week. Participation by students was voluntary. Although attendance was not high, the students who came rated the experience as valuable.

Subsequently the faculty decided to **require** attendance at a core group of four workshops in the fall semester. Also, we decided to include a fall orientation program. The fall trial involved over six hundred students: all Monday-Wednesday-Friday arithmetic, pre-algebra, and first semester elementary algebra students. We noticed immediately that students were less disruptive in class. As the table below shows, pass rates also improved.

Fall Pass Rates for Developmental Math					
Course Title	**Class-time**	**1994**	**1995**	**1996**	**1997**
DVM 001 (arithmetic)	MWF	23%	33%	41%*	50%*
	TTR	47%	53%	67%	42%
	EVE	56%	73%	57%	63%
DVM 003 (pre-algebra)	MWF	44%	34%	53%*	52%*
	TTR	64%	42%	63%	58%
	EVE	58%	65%	60%	69%
DVM 004 (elementary algebra)	MWF	38%	28%	54%*	54%*
	TTR	45%	55%	54%	54%
	EVE	73%	65%	51%	69%
DVM 005 (self-paced)	MWF	50%	54%	60%*	57%*
	TTR	61%	54%	59%	51%
	EVE	67%	72%	57%	75%
* mandatory workshop program used					

In spring of 1997 the workshops were again offered, but this time they were optional because most students were returning from the fall semester. Then in fall of 1997 the orientation and workshops were made mandatory for all developmental math students except those continuing with the second semester of elementary algebra. Students again rated these workshops very highly.

In spring of 1998 the workshops were incorporated into the arithmetic classes. (Studies at the University of Maryland suggested such inclusion.) We plan to allow greater flexibility to the evening students in choosing their workshops, but for daytime students the core workshops will remain mandatory. We also plan to include weekly workshops on problem-solving in the fall 1998 offerings.

Two other campus agencies, Vocational Support Services and the campus tutoring center, are using the workshops with their own instructors for learning support of math students that they serve.

Design

Each workshop was developed by two or three faculty and support staff using available resources and their own experience. The format for the first workshop, Time Management and Goal Setting, was so successful that we adopted it for all the rest. The instructor packet includes a workshop plan, with minute-by-minute descriptions of activities (below); an instructor supplement, with background reading for the instructor; overhead transparencies; a student handout; an evaluation form; and a follow-up activity form. Students were required

to complete the follow-up activity and return it to their math instructors in order to gain credit for attendance.

Time Management and Goal Setting Workshop		
Objective	**Activities**	**Time**
Identify time management probems	Students break into small groups of 3-4 to share time problems	3 minutes
Aids to goal setting	Lecture/discussion	5-7 minutes
Write out goals for math	Write 2 long-term goals related to math Write 2 mid-term goals related to math Write 2 short-term goals related to math Need not share with group	5 minutes
Check for realistic goals	See: Points to consider when setting a goal Discussion	5 minutes
Begin a weekly planner	Write down all courses for the semester Write down desired grade next to each course Write down hours of study/week needed to get that grade Check for realistic times using Rule of Thumb	10-15 minutes
Activities associated with studying	Show transparency	2 minutes
Explain follow-up activity	Determine 5 goals for the semester realting to math class Think about things affecting math class performance Turn in copy to your instructor Complete weekly planner and try for one week Submit planner to instructor	5 minutes (2 hours of lab time is credited for completed follow-up activities)
Fill out workshop evaluation forms	Hand out evaluation forms	

Very little preparation was needed by first-time workshop instructors. Afterwards many improvised and expanded the topics. As faculty began teaching these workshops they became experts at math study skills and added to their methodologies.

Workshop instructors are paid using rates for substitute teaching. The entire fall workshop schedule (234 workshops) cost the college about $6,500, including one hour of coordinator release time and cost of materials.

The developmental math fall orientation program is held at the beginning of the second week of classes. The program opens with a ten-minute video featuring successful developmental math students answering these questions: "What did you include in your study routine to achieve success?", "How did you schedule around the various demands on your time to accommodate your math work?", and "What advice would you give to a new student in developmental math?" The program schedule is as follows:

Developmental Mathematics Orientation Program	
Activities	**Time**
Success Video	10 minutes
Welcome by former developmental math students	3 minutes
Dean: Student Responsibilities and Attitudes	5 minutes
Math Coordinator: Developmental and Credit Math Curriculum Workshop Program and Scheduling	3 minutes 5 minutes
Counselor: Support services	3 minutes
Tutor: Math tutoring services	3 minutes
Lab Coordinator: Video and computer support, follow-up activity	3 minutes

Workshop scheduling forms are collected as students leave. The orientation program takes approximately 40 minutes.

Study skills workshops begin the third week.

In summary, faculty and staff at PGCC developed a series of workshops and a fall orientation program to help at-risk developmental mathematics students. These relatively inexpensive interventions have shown positive results in improved course pass rates, reduced classroom disruption, and favorable student evaluations.

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